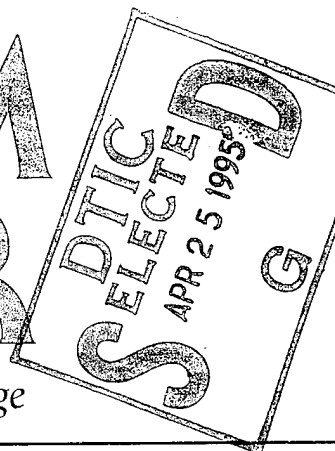


March-April 1995

PROGRAM MANAGER

Journal of the Defense Systems Management College



Culture Change

Satellite Imagery

Affirmative Action

Mr. Norman R. Augustine,
Chairman and Chief
Executive Officer,
Morrison Knudsen
Corporation,
Speaks to
Program Manager

See page 2

**"America is
the Only
Surviving
'Full-Service
Superpower'"**

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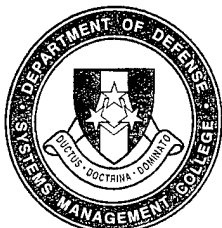
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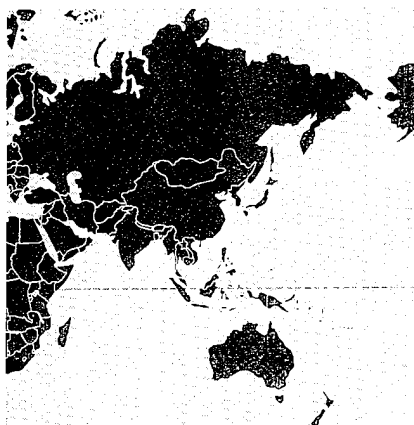
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Richard Kwatnoski

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story of cooperation between the U.S.
Defense Acquisition Community and
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South Korea.

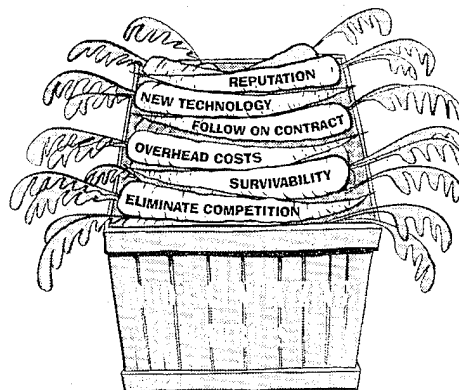
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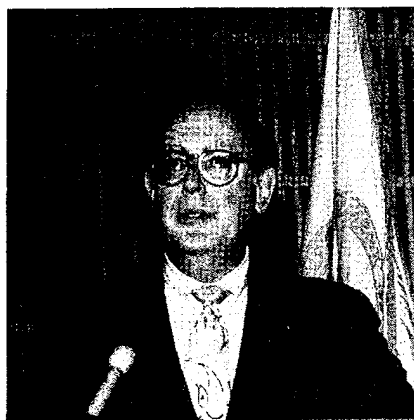


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10 Consortium for Culture Change

Collie J. Johnson

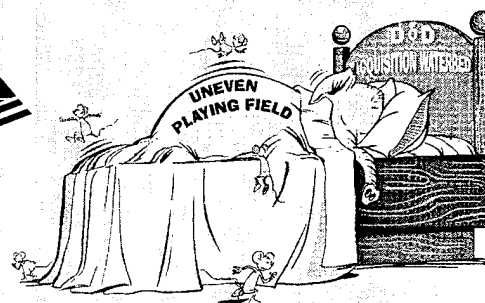
The pace of change is accelerating, and the culture is changing whether we wish it to or not.



14 Fostering Diversity

Mary P. Rowe

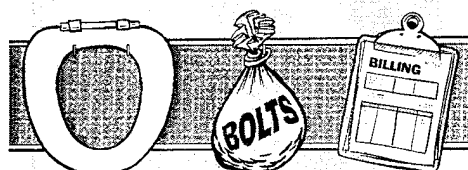
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MARTIN MARIETTA'S CEO SPEAKS TO PROGRAM MANAGER

*Norm Augustine — Industry Giant and
Longtime Friend of DSMC*

Recently, the College hosted a distinguished guest lecturer. His name was Norman R. Augustine, and for most of you, no further introduction is necessary. For those of you who have never had the privilege of reading his published works or attending one of his lectures, *Program Manager* is indeed privileged to present our interview with this distinguished author, lecturer, and former Under Secretary of the Army.

Mr. Augustine is currently the Chairman and Chief Executive Officer, Martin Marietta Corporation. As *Program Manager* goes to press, Martin Marietta and Lockheed Corporation are expected to finalize their "merger of equals" soon. Mr. Augustine will assume the title of President of the new Lockheed Martin Corporation. He shares with us a view of acquisition reform from the perspective of a major defense contractor.

Program Manager: Since Congress recently legislated acquisition reform, how will this affect the way you do business with the government?

Program Manager gratefully acknowledges the assistance of Mr. Zack Russ, Director, Editorial Services, Martin Marietta Corporation, in the preparation of this article.

Mr. Augustine: Let me begin by saying that Secretaries Perry, Deutch and Kaminski, the Congress and the President all deserve broad acclaim for the first successful initiative in memory to reform the much-maligned defense acquisition process. Having served on both sides of the acquisition process, I recognize how difficult it is to make progress in this area. One reason is that it's so arcane. No politician wins any votes at home with it. So I commend those involved with this initiative, and I believe it will somewhat improve the working relationship between the Department of Defense (DoD) and its suppliers.

Having said that, however, we all must realize this is barely a first step, with much more yet to be done. We should avoid declaring victory and should instead turn our attention to assuring that the regulations implementing this new act carry out the



Mr. Norman R. Augustine, Chairman and Chief Executive Officer, Martin Marietta Corporation.

legislation's intentions. And, of course, we still need to reform the entire acquisition culture — something that is easier to envision than to implement — by encouraging such activities as prudent risk-taking, delegating and long-term commitment. Among the most important things we can do is to escape the current situation described

Bachrach

by the quote, "Where everyone is in charge of everything, no one is in charge of anything." We should assign authority and responsibility to the same individuals — and, in the case of acquisition projects that individual should be, in my judgment, the program manager.

Program Manager: What are the most important next steps that should be taken now to improve the process?

Mr. Augustine: The single most important step would be to halt the "turbulence" that's prevalent throughout the acquisition process. The principal cause of inefficiency in procurement is not the infamous coffee pot, hammer or even toilet seat; it is the perpetual motion of requirements, people, schedules, funding and the like. I once added up the total amount of money wasted on highly publicized examples of procurement waste — including \$600 toilet seats, \$7,000 coffee pots, \$400 hammers, and the like — and came up with a grand total of \$92,000. Which sounds pretty egregious until you consider that over a period of three decades, four successive generations of forward area air defense systems — from Mauler to Roland to Sgt. York to ADATS — were canceled, at a total cost of more than \$6.7 billion. That's a poor return for the taxpayer. I also added up the money spent in recent years on canceled programs as a whole — programs which did nothing to help our nation's fighting capability — and found that the funds expended could have purchased 1,000 Abrams tanks, 100 F-16 fighters, 1,000 AMRAAM missiles, 10 Titan IV launch vehicles, 20 JSTARS aircraft, 10,000 Javelin missiles, 70,000 MLRS rockets and one nuclear submarine.

What's needed is common agreement on implementing several needed reforms, including: making it more difficult to start new programs; giving very few people the authority to change or delay or stop a program once started; reducing the size of staff



Photo courtesy of Martin Marietta Corp.

The single most important step would be to halt the "turbulence" that's prevalent throughout the acquisition process.

organizations in Congress, the Pentagon and industry; setting nominal "zero real growth" overall funding baselines for initial out-year planning; and establishing multi-year budgets for the Pentagon and its programs.

Program Manager: What else needs to be done?

Mr. Augustine: Well, let me broaden the question to include the overall defense budget, which has been in a dive for the better part of a decade. Recognizing that a consensus does not yet exist for substantial increases in defense spending, I believe at the very least the defense budget should be stabilized. The recent Administration initiative to add \$25 billion over several years to defense is a constructive step, but in my judgment

does not address the full range of the challenges the nation's defense establishment faces nor does it significantly do so in the near term. It should also be noted that the lag time between authorizations and outlays in the procurement budget virtually assures several more years' erosion in the defense industrial base.

Further, the balance among procurement, R&D, and O&M funding must be restored. We must provide greater funding for exploratory development and prototyping — particularly high-risk/high-payoff pursuits of the type which helped make American defense technology the best in the world and which is central to our stated defense strategy. We must invest more in modernization so that our forces are well equipped to protect themselves and our national interests. I calculated recently that we are now on a replacement cycle of about 54 years, meaning that the average item of equipment provided our Armed Forces has to last 54 years. This is in a world where technology generally has a half-life of from 2 to 10 years.

To the great credit of those bearing the grave responsibility of providing for America's Armed Forces, the nation has, in this recent downsizing, to a considerable extent avoided the trap of building a so-called "hollow force" in terms of its readiness to fight. But what we must also assure ourselves is that we do not gradually build a force engendering a new kind of hollowness, namely the lack of modernization needed to fight effectively. Thus, we must be concerned both with readiness and with modernization. Lack of attention to the former produces near-term casualties, to the latter produces future casualties.

One of the complicating factors in defense budgetary planning is that the time horizons are so distant. It is useful to recall that the systems that performed so well in the Persian Gulf largely represented the technology of the 1960s, the development of the

1970s, and the production of the 1980s — all utilized by the people of the 1990s. In other words, the decisions we make today will to a considerable extent determine the casualties we will suffer in carrying out our national security objectives in the early part of the next century. This is a very great responsibility for each of us.

Program Manager: What is your view of the trend by the Services to retain depot and maintenance work rather than farm it out to private companies?

Mr. Augustine: Any relative expansion of the government in maintenance and repair operations, of course, only intensifies the decline of the defense industrial base. This trend, minor at first, has accelerated in recent years as military installations seek funds to sustain infrastructure. This trend toward greater government involvement in functions generally allocable to the private sector flies in the face of trends almost everywhere else on earth.

Program Manager: Secretary Longuemare believes DoD will eventually gravitate toward a single procurement agency. Do you support the concept of a single procurement agency? And how would this affect your ability to respond to the different Services' unique requirements?

Mr. Augustine: In a general sense, I support greater uniformity and consistency throughout DoD procurement. I also support enhanced professionalization of the procurement workforce. And I think a single agency would make sense with regard to those commodities that are common throughout DoD and that would benefit from "bulk" purchasing. I would agree with Secretary Longuemare in this regard.

However, making peanut butter is a great deal different from making nuclear submarines or stealth aircraft. I believe we need to get closer to our



Photo courtesy of Martin Marietta Corp.

To understand the industry's current difficulties, you need to look not at the 35-percent overall drop in real defense spending, but at the nearly 70-percent decline in procurement spending since the mid-1980s.

ultimate customers and work with greater synergy with them, especially in the R&D phase of procurement. I fear a single procurement agency in those circumstances would simply add another layer of insulation to an already well-insulated process. In short, I would be opposed to centralization of this latter type.

Program Manager: How would you characterize the health of the defense industrial base?

Mr. Augustine: The industry is in a state of considerable disrepair, a fact that has not gone unnoticed on Wall Street. The major firms sell at a 30-percent discount to the S&P 500 index. The combined market value of the top four aerospace firms is less than that of McDonald's, meaning that Big Macs and Egg McMuffins are judged by the market to have greater immediate reward than stealth aircraft and "smart" weapons.

To understand the industry's current difficulties, you need to look not at the 35-percent overall drop in real defense spending, but at the nearly 70-percent decline in procurement spending since the mid-1980s. Most businesses regard a loss of 10 percent in the size of a market as a disaster; a 70-percent drop in a market is somewhat unprecedented.

Program Manager: While the picture you paint is grim, some would say that the demise of the Soviet Union means we don't need such a large defense industrial base.

Mr. Augustine: It's clear that in the changing world, America could afford to safely shrink its defense industry. And indeed we have done just that. Since the fall of the Berlin Wall, we've lost more than a million jobs, and the industry is now consolidating at a furious pace. The defense supplier base has imploded, with some numbers suggesting a shrinkage from about 120,000 firms a decade ago to 30,000 today. The question that I think is important is: "How much is enough?" My belief, based on over a third of a century serving in the Pentagon and in the defense industry, is that we are perilously close to undermining our nation's defense industrial base.

Lockheed and Martin Marietta, among other firms, have pursued what I believe to be the only rational course for dealing with such a precipitous decline: We have been consolidating — merging with strong partners now before weak companies destroy the

marketplace through desperate acts. I call the latter the Law of the Cross-Eyed Discus Thrower: "He may not win any gold medals, but he sure keeps the spectators on their toes." The bottom line is that three full factories are better — for everyone — than six half-full ones.

Program Manager: Do you see the Lockheed Martin merger as beneficial to the government?

Mr. Augustine: Yes, I do — in two ways. First, as we consolidate, we will cut overhead significantly, saving the government — and the taxpayers — large sums of money. As a result of our recent merger with GE Aerospace, we were able to close five million square feet of plant space and save the government some \$1.5 billion over the next 5 years alone — with no out-of-pocket investment by the government. I believe we'll see savings every bit as impressive after Lockheed Martin has a chance to review the ways in which we can become more efficient.

Second, and just as important, by merging now, while we're both strong, we can assure the government of a robust manufacturing and R&D resource for the future. We saw in the Gulf War the consequences of modern military technology — for example, precision guided weapons delivered within inches of their targets, stealth, the ability to see at night and to navigate within a few meters even on a desert. The result was that the war was won quickly, decisively and with relatively few American casualties. The United States needs a strong defense industrial base if it is to field such systems in the future.

Program Manager: What do you think of the talk about government downsizing?

Mr. Augustine: If I'm not mistaken, the government as a whole is talking about a 12-percent reduction in staffing by the year 2000. To an industry that has given pink slips to

more than one million dedicated workers, with another half-million likely, 12 percent doesn't sound like an overwhelming undertaking. Now, having spent 10 years in government myself, I know that such change is extraordinarily difficult. I also know that the government has large numbers of extremely able workers — but we simply must reduce costs. This is especially true of infrastructure costs. For example, the Defense procurement budget has, as I've already noted, been reduced by some 70 percent in real purchasing power — while infrastructure costs have thus far been reduced just 18 percent.

Program Manager: In light of the need to shift away from such heavy dependence on a declining Defense market, has your company been finding ways to implement dual-use and technology transfer programs?

Mr. Augustine: In previous downturns, the conventional wisdom has been to diversify as far away from defense as possible. Our industry has tried to build buses, canoes, even banjos. Our record has been unblemished by success. So I would say that to be successful, we need to go into things that are very closely related to one's core business, but outside of defense — involving large customers, high-technology and large systems. One must know one's core incompetencies.

Traditionally, dual-use refers to the transfer of technology in a direction from the defense sector to the commercial sector. However, as defense budgets continue to be reduced, exactly the opposite will become increasingly the case; that is, defense technology will in most cases no longer be at the leading edge of innovation, and the tide will turn, with state-of-the-art technologies more likely to move in the opposite direction. Having said that, I believe that it is important for companies to remain steadfast with regard to their commitment to national

NORMAN R. AUGUSTINE

Mr. Norman R. Augustine's biography is extensive enough to fill at least four pages of this magazine. Rather than highlighting his education, numerous awards, and extensive service in government and private industry, *Program Manager* reveals a little-known side of the man behind the public and corporate persona.

He has dog-sledded in the Arctic and explored volcanos in the Antarctic; backpacked in the Canadian and U.S. Rockies; horsebacked in the U.S. Rockies; sailed a tall ship in the West Indies and a stern wheeler up the Mississippi; traveled the Oregon Trail in a covered wagon; snorkeled on the Great Barrier Reef; boated the Amazon; hot-air ballooned in Africa; rafted the Grand Canyon; toured the Out-Back of Australia and the desert of Saudi Arabia; been on camera safari in Tanzania and Kenya; and photographed polar bears in the Northwest Territory.

Mr. Augustine is co-author of *The Defense Revolution* and author of *Augustine's Laws*, printed in four languages; holds copyrights on a book of his photography and on a calculator for baseball managers; and is listed in *Who's Who in America* and *Who's Who in the World*.

security. We at Lockheed Martin intend to do so.

Program Manager: Can you give us an idea of the tech transfer projects you've been involved in?

Mr. Augustine: These are, of course, the traditional commercial ventures that have benefitted American society, including: commercial communications, imaging navigation and weather satellites; medical technologies and materials; supercomputers; radar, sonar, and robotics technologies that help to clean up the environment; and defense electronics

expertise that can contribute to "intelligent" highway and rapid rail systems — to name but a few examples.

Some other areas that look particularly promising and in which we are involved include electronic simulation technology, which uses "video game" graphics simulations in a wide variety of applications (including education, medicine, advanced operator training, as well as military training), automated fingerprint recognition, and advanced diagnostic techniques for reading mammograms — to name a few.

Program Manager: What will be the role of the Armed Forces in the 21st Century?

Mr. Augustine: In the middle of this century, our Armed Forces were called upon to perform a clear mission — to fight and win a global war. For most of the latter half of this century, the American public looked to our forces to successfully prepare for war — and by so doing to deter World War III.

Today, and for the foreseeable future, the public is looking to our military to "wage peace" — that is, to deter small wars as well as big ones — a challenge that is turning out to be daunting. This is the challenge the American people have given the defense establishment as we approach the 21st Century.

Let me draw a parallel: Just as America's commercial industry has been undergoing a wrenching realignment and downsizing over the past decade, prompted by the presence of Japan on the world scene, I believe America's defense industry is experiencing a similar process of realignment and downsizing, prompted by the absence of the Soviet Union on the world scene.

All of this said, America is the only surviving "full-service" superpower — a fact that carries with it extraordinary



Our opportunity as a nation is to build upon the advantage of being the only remaining "full-service" superpower, and to underpin it with a right-sized, high-quality defense industrial base.

responsibilities — and the future remains very difficult to predict. General Schwarzkopf, toward the end of his autobiography, included the following passage: "If someone had asked me on the day I graduated from West Point where I would fight for my country during my years of service, I'm not sure what I would have said. But I'm damn sure I would not have said Vietnam, Grenada and Iraq."

And that's the problem in trying to forecast a precise mission need for national defense and the industrial base that underpins it, a problem which is exacerbated by the 10- to 20-

year lead time for most products of the defense industrial base. For in this age of "come-as-you-are" wars, the casualties we suffer in combat may depend more on our preparedness prior to the initiation of combat than on anything we do during combat — a point writ bold in contrasting the initial battles in, say, Korea and in the Persian Gulf.

Our opportunity as a nation is to build upon the advantage of being the only remaining "full-service" superpower, and to underpin it with a right-sized, high-quality defense industrial base. This will require considerable effort on the part of those of us who bear a fiduciary responsibility for America's military capability; because as marvelous as is the free enterprise system, there are no forces in that system to assure the preservation of an adequate defense industrial capability. This is the underlying dilemma of the defense industry.

Program Manager: One last question: We understand you've recently published a new book. Can you tell us about it?

Mr. Augustine: Perhaps you've heard that I'm working on a new set of "laws" which take up where my book, *Augustine's Laws*, stopped. The first in this series is that, "Tornadoes are caused by trailer parks." Actually, I have collected a good deal of empirical evidence verifying the correctness of this law. With reference to my previous books, I might advise you that I have been told by rare book dealers that unsigned copies of my books have become highly sought-after collector's items.

Ed. Note: When *Program Manager* initially contacted Mr. Augustine for an interview, we were surprised to learn that Mr. Augustine had appeared in the original issue of the predecessor publication to *Program Manager*. In granting us this interview, he remarked that "this will make it kind of a reunion." From the staff and faculty of DSMC, "welcome back."

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Lt. Col. George A. Noyes III, USAF

On December 7, 1945, the Imperial Japanese Navy bombed Pearl Harbor. The leader of the expedition, Admiral Yamamoto, was quoted as saying "I'm afraid we have awoken [sic] a terrible sleeping giant." Many folks mistakenly think that Admiral Yamamoto was referring to America's military might. He was not. He was providing a veiled glimpse into the industrial capability of the United States. America had the raw materials, factory capacity, labor and engineering know-how to develop, produce and deploy an amazing array of weaponry upon an unsuspecting enemy.

Twenty years later America was once more under attack, not from armed forces, but from the assault of Japanese manufacturing techniques. The Massachusetts Institute of Technology's Commission on Industrial Productivity noted in a book, *Made in America*, that the 1960s were the beginning of the demise of many industrial sectors, including textiles, electronics, steel and automobiles. It seems as though the "Giant" went back to sleep. What happened...and what can we do about it?

Lt. Col. Noyes is the APQMC Course Director and a Professor of Manufacturing Engineering, DSMC.

Can mid- to senior-level acquisition professionals learn to combat the threat to our industrial base by making and throwing paper airplanes in a class at DSMC? Evidently, there are many different ways adults can learn. An unknown author was once quoted as saying, "I hear and I forget; I see and I remember; I do and I understand." Thus, seeing students on the floor on their hands and knees calculating settings on a catapult to launch a plastic ball into a coffee cup some 120 inches away, is learning.

The Advanced Production and Quality Management Course (APQMC) is a two-week capstone, senior-level course directed at personnel in the Manufacturing and Production, Quality Assurance/Engineering and Scientist career paths. Significant portions of the course use statistical and quality planning tools and techniques to aid the learning process. Many of the in-class learning objectives are ac-



Students of The Advanced Production and Quality Management Course, DSMC, participate in a catapult exercise to learn about Design of Experiments. From left: Gene Nelson, Carolyn Shelton, James Reese, Patricia Whittington, Rosi Mitchell.

complished with hands-on learning rather than the old methodology of "Death by Viewgraph."

The topics covered are emerging as "state-of-the-art" techniques for identifying and reducing risks as practiced by world-class producers. General

Motors, Ford and Chrysler all used high-performance teams to develop next-generation automobiles to compete on a global basis. These teams use such tools and techniques as Concurrent Engineering, and Integrated Product and Process Development to shorten the development cycle and bring a product to market with fewer problems, higher quality and reliability, and at a reduced cost.

Students launch catapults to learn about Design of Experiments, and move poker chips from buffer-to-buffer to understand Theory of Constraints. Lessons on capturing customer requirements have students building a

hands-on demonstrations and exercises that facilitate student learning in these areas.

Our professors keep abreast of changes in the manufacturing environment by attending seminars, visiting facilities, and engaging in timely research. Visits to Boeing (777 and F-22 program), GM Design Center and Black & Decker provide evidence that these new processes work. Research and consulting on such activities as the Air Force's Lean Aircraft Initiative allows us to work with aerospace leaders and with leading academic institutions such as MIT, Harvard and Georgia Tech. Finally, our benchmarking initiative shows clearly that DSMC is providing a competitive academic environment. A side-by-side comparison of APQMC and the MIT Graduate Introduction to Aerospace Engineering showed a very high level of correlation between the two offerings.

Strangely, the level of interest in, and capability to provide management attention to design (producibility) and manufacturing (capability) issues is dismally small on most programs. It doesn't have to be that way. Dr. Walter LaBerge, Visiting Professor of the University of Texas at Austin and one of the principal inventors of the Sidewinder air-to-air missile, was once quoted as saying:

Persons should not be allowed to become PMs until they have had a garage check. That is, they must like to work with their hands and understand the process of building something if we are to expect them to be successful program managers.

Our leading universities are taking note of this delinquency, and are starting to build into curriculum experiences situations in which students actually build things. Today, APQMC is a leader in providing hands-on learning, practical exercises and distinguished senior-level guest lecturers.

WANTED!

DSMC Press Needs One- Column Fillers

Help us fill an empty space in our lives! Contribute short, one-column fillers (about 200 words) to round out our bimonthly issues of Program Manager.

Why not write about some program or event that propelled you to a better future in acquisition or made your job in the acquisition arena easier. Reflect on your career, and put in writing those events that could be characterized as —

- Inspiring
- Paradigm-breaking
- Thought provoking

Think of your potential article as a kind of "mini" lessons learned. Send your articles to the following address:

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Wherever possible, send us the electronic media on a 3½" disk along with a printed copy of the article. Another option is to attach the document to an Internet or E-Mail message. Good luck with your writing — and we'll look forward to hearing from you.

Photo by Ed Boyd



"House of Quality" on a World Class Cup of Coffee to get hands-on experience with Quality Function Deployment. Building "Little Red Wagons" helps students learn about bottlenecks and Herbies as they model their factory floor in a simulation exercise. Prominent government and industry guest lecturers present timely examples of how these tools are being applied, while course instructors give

CONSORTIUM FOR CULTURE CHANGE

Changing Norms, Beliefs, Values and Behaviors

Collie J. Johnson

Under the auspices of the National Performance Review - Reinventing Government and the Defense Performance Review - Fostering Excellence, the Department of Defense (DoD) conducted the Consortium for Culture Change Workshop at the Defense Systems Management College on 10 January 1995.

Drawn by the desire for more information on Vice President Gore's National Performance Review initiatives and the means to achieve them, the Consortium for Culture Change (CCC) Workshop attendees — professionals from all walks of the DoD — focused on the future of the CCC, its roles and responsibilities, charter, vision and mission.

Background

The Consortium for Culture Change (CCC) came into being on June 8, 1994 and includes the whole community of federal change agent specialists needed to implement the vision of a reinvented government. Its purpose is twofold: to tremendously acceler-

ate the ability of internal change agents to transform the culture of the federal Government; and to support the formation and growth of a network for internal, federal change agents.

Any federal employees who identify themselves as facilitating cultural change, including formal and informal federal associations, are eligible to join. The CCC derives its conceptual framework from excerpts of the National Performance Review: "Transforming Organizational Structures"; "Creating Quality Leadership and Management"; and "Reinventing Human Resource Management."

Two core definitions are key to understanding and defining the focus of the CCC: *organizational culture* and *culture change*. *Organizational culture* involves the norms, beliefs, values

and behaviors that permeate a work system and significantly influence what will and won't be done. *Culture change*, on the other hand, is change in the norms, beliefs, values and behaviors that must occur for the reinvention aspect of the National Performance Review to succeed.

Keynote Speaker

Dr. Gerald B. Kauvar, Deputy Director, Defense Performance Review, delivered the key address at the Consortium. Dr. Kauvar described two earlier efforts to change the DoD culture: the model installation program and the unified budget test. Both empowered installation commanders to run their bases — and carry out their missions — "their way, not Washington's way." That meant getting rid of unneeded regulations and freeing people to do their best.

Seven Dimensions of Culture Change

Key to the CCC's conceptual framework are seven dimensions of *culture change*:

- Organizational focus — from internal operations to customer needs.
- Structure — from hierarchical to flat and fluid.
- Motivation — from punishments to incentives.
- Relationships — from protecting turf to teamwork.
- System character — from rigid to flexible.
- Risk orientation — from risk averse to learning system.
- Information technology — from incompatible to networked.

Ms. Johnson is Managing Editor, Program Manager, DSMC Press. The DSMC Press also wishes to acknowledge Dr. Gerald Kauvar, Deputy Director, Defense Performance Review, and Dr. Mary-jo Hall, Professor, Systems Acquisition Management, DSMC, for their cooperation in the preparation of this article.

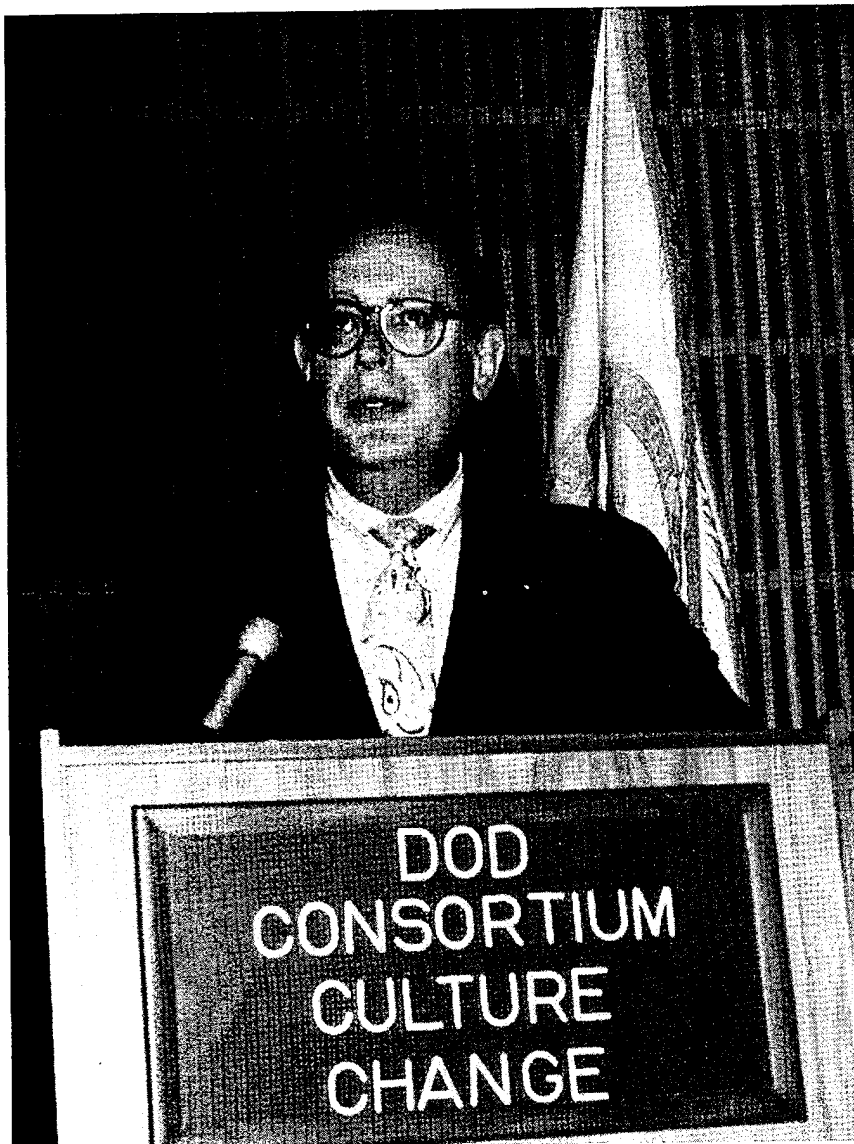


Photo by Richard Mattox

Dr. Gerald Kauvar, Deputy Director, Defense Performance Review, delivers the keynote address at the Consortium for Culture Change Workshop, Defense Systems Management College, on 10 January 1995.

"The 'gold card' signed by President Clinton and Vice President Gore describes the cultural change we need," said Dr. Kauvar.

Dr. Kauvar said the "gold card" describes the new culture and tells all of us how to get there. He mentioned that Phase 2 of the National Performance Review will stress asking whether what the government does is essential, asking whether a mission can be performed better by state and local governments, and asking whether a function can be devolved to the private sector.

Dr. Kauvar concluded by saying that the pace of change is accelerating. The culture is changing whether we wish it to or not. The only question is whether each federal employee will work to accomplish the change portrayed on the "gold card."

DoD has done extraordinarily well so far in the National Performance Review, but we can and must do more. "Implementing the cultural change," Dr. Kauvar said, "isn't just my job or the Secretary of Defense's job, or the job of the President and Vice President. It is every federal employee's

job. Our bosses have made it easier by providing the 'gold card' that maps our destination and the route to it."

Ed. Note. To join or learn more about the CCC, contact Ms. Lisa Jung at Commercial (703) 693-2886; DSN 223-2886; Telefax (703) 693-2864; or Internet: dpr@osdpo.secdef.osd.mil.

Reference

Gore, Vice President Al, *Creating a Government That Works Better & Costs Less*, "Accompanying Report of the National Performance Review," September 1993.

The Gold Card

We will invent a government that puts people first by —

- cutting unnecessary spending;
- serving customers;
- empowering employees;
- helping communities solve their own problems; and
- fostering excellence.

To do that, the card says we must —

- create a clear sense of mission;
- steer more, row less;
- delegate authority and responsibility;
- replace regulations with incentives;
- develop budgets based on outcomes;
- inject competition into everything we do;
- search for market, not administrative solutions; and
- measure our success by customer satisfaction.

Vice President Gore's Second Phase of the NATIONAL PERFORMANCE REVIEW



95 JAN -4 AM 9:50 THE VICE PRESIDENT
WASHINGTON

January 3, 1995

MEMORANDUM FOR HEADS OF EXECUTIVE DEPARTMENTS AND AGENCIES
FROM THE VICE PRESIDENT

SUBJECT: Second Phase of the National Performance Review

The President has announced his proposal for a Middle Class Bill of Rights to help the American people restore the American dream. As part of this effort, he has asked me to lead a second phase of the National Performance Review. This review will examine the basic missions of government, looking at every single government program and agency to find and eliminate things that don't need to be done by the federal government. It will also sort out how best to do the things government should continue to do.

To begin this fundamental rethinking of what the federal government should do and how it should do it, I would like each of you immediately to form a team in your agency to review everything you do, asking:

1. If your agency were eliminated, how would the goals or programs of your agency be undertaken—by other agencies, by states or localities, by the private sector, or not at all?
2. If there are goals or programs of national importance that will remain undone and require a federal role in order to be accomplished, should they be done differently than they are being done today in order to enhance service to the customers?
3. How do your customers (not just interest groups) feel about the possible eliminations or changes? This would build on your ongoing efforts to get customer input about the services they want, and how to improve satisfaction with the services we provide. Throughout the review we have to continue to put customers first and to deliver on our published customer service standards.

Phase 2 of NPR will also review the federal regulatory process to find a way to get better results for the public with less interference in their lives.

The staff of the National Performance Review will distribute a schedule for the review. The review will be a collaborative effort between the agencies and the NPR staff, OMB, the President's Management Council, and the White House Policy Councils.

W 52246

Fundamental Rethinking to Shape Tomorrow's Government

The President and I believe absolutely in federal workers. But these workers face uncertain times. We need to involve them in sorting out tomorrow's government. We need to continue to cut red tape and empower them to get results. And we need to treat them in a way that values their past contribution and their role as the most important resource in the government of the future.

Carrying out Phase 2 of the National Performance Review while we deliver on the promises of Phase 1 is a big challenge. It is also an enormous opportunity for us to change yesterday's government and make it work for the America of today and tomorrow. Thank you for your help.



FROM RED TAPE TO RESULTS

CREATING A
GOVERNMENT THAT
WORKS BETTER
& COSTS LESS

Department of Defense

Accompanying
Report of the National
Performance Review

Vice President Al Gore



FOSTERING DIVERSITY

Some Major Hurdles Remain When the Playing Field is Tilted

Mary P. Rowe

Affirmative action, in the narrow sense of government regulation, "cannot get there from here." By itself, it is not really effective. This article is no diatribe against affirmative action — I believe in it. I do not believe that meritocracy is in much danger from affirmative action or that political correctness is going to kill free speech. But I do not think that affirmative action or other negatively oriented regulation — that says essentially, "comply with these technical regulations and bureaucratic requirements or you do not get your federal money" — will turn the United States into a productive mosaic society where women and men of all races are randomly distributed throughout the world of paid and unpaid work. Affirmative action still deals with the outermost layer of the onion. While it helps with recruitment issues, compliance-oriented affirmative action alone is not sufficient to achieve healthy diversity.

Affirmative Action Regulation Has Its Shortfalls

I write from 30 years of professional experience with issues of race and gender: I worked for a decade as an economist in the Caribbean, Africa and the United States; and for the past 20 years, I was one of two

ombudspeople for everyone at MIT, acting as adjuncts to the major support services for students and employees. My African-American counterpart and I work separately, seeing anyone in the community who wishes



with the outermost layer of the onion. While it helps with recruitment issues, compliance-oriented affirmative action alone is not sufficient to achieve healthy diversity.

our help on any subject, but we report our caseloads together. Last year we helped with a wide range of some 1,840 concerns: promotions, salaries, safety, defamation, career advice, dormitory problems, layoffs, ethics cases, dependent care, recruitment, helping with referrals, helping with transfers, and so on.

About half our caseload in recent years reflected concerns about equal opportunity, workplace mistreatment or harassment. In addition — these are not necessarily the same set of people — about half of those who called on us last year were minority members. Affirmative action and equal opportunity regulation are directly helpful for some of the race and gender problems we encounter, but many cases revolve around career and family, personal safety and security, or subtle discrimination issues.

These are areas where no current institutional response is really successful. In part, this is because academic institutions really cannot succeed on their own — and the institutional responses that do appear to help are beyond the scope of what is required by affirmative action regulation. For example, many women and some minority men drop by to talk about personal relationships and dependent care. They often bring up serious concerns about anonymous threats, obscene phone calls, stalking, emotional and physical violence — in short, security problems — at

Ms. Rowe is special assistant to the president of MIT and adjunct professor of management at the MIT Sloan School of Management.



All major corporate and university studies show that U.S. workers and professionals are worried about how to take care of their children.

home, on the way to work and at work. And there are constant stories about micro-events of racism and sexism.

Career and Family

She had the baby in her first year as an assistant professor in engineering at a very competitive school. Her spouse was starting a similar job. The baby was one of those many babies who cried a lot. The mother wanted to nurse, but the school had no place to nurse, no breast pump, no support group. Her family was far away, so the only way she could cope was to take on major debt for full-time child care; debt on top of the loans incurred for her training. She decided to change careers and left the university.

All major corporate and university studies show that U.S. workers and professionals are worried about how

to take care of their children. Studies also show that many of today's parents will actually spend more years providing elder care than providing child care, and that the hardest hit are those who must do both at once. To meet these multiple demands, many parents stagger their schedules, spending little or even no waking time together, at high cost to their marriages. Some recent research shows children doing less well than their parents in emotional and academic terms. In addition, professionals like me are seeing more and more young people who seem unable to form happy personal and professional relationships. Despite the fact that polls continue to show "family" as the chief source of life satisfaction for most Americans, success at work is now in direct conflict with family life for many.

A constant refrain among female graduate and post-doctoral students and faculty has to do with "wanting a life." The steady 70-, 80-, and 90-hour weeks demanded of top academics seem hopeless for those who want a happy family life. Adequate dependent care may also seem impossible for a graduate student, post-doctoral student, or junior faculty on an academic salary. These questions are also important for white males. But they are especially difficult for women, who are much more likely to take care of dependents, and for minority men and women, who are more likely to come from families without financial resources to help them and to feel, instead, that they should be helping support their families of origin. These problems are also especially difficult for those gays and lesbians who lack family support and domestic partner benefits.

Safety and Security

"We wanted very much to recruit him, but he said that City XXX was no place for African-Americans to raise their children."

"I really wanted to go there for my residency but it simply is not safe for

women to work at that hospital — or anywhere in City XXX."

No one can prove whether sexual and racial harassment and assault — and gay-bashing, anti-Semitism, attacks against the disabled, etc. — are more prevalent now than they were 10 years ago; however, on the basis of the many hundreds of problems a year that I have handled as an ombudsperson, I believe that safety and security at home and at work are now more serious problems than in the early 1970s. Young minority men and women, white women, and lesbians and gays often have to think about harassment at school, as well as street violence, when they are considering where they can safely live and work. Virtually all young women I see know friends who were raped, and virtually all young blacks know a family that lost a family member to violence, or have a friend who was injured on the street.

New concerns about all kinds of harassment are not happenstance.



A constant refrain among female graduate and post-doctoral students and faculty has to do with "wanting a life."

Nor is it an accident that there has been a movement toward stalking laws and increased concern about domestic violence; most ombudspersons and therapists are dealing with increased numbers of people who "can't let go" of a former lover or acquaintance or professor or academic institution. Perhaps this is related to the fact that many families can no longer take adequate care of their children and other dependents. Whatever the reasons, safety and security have become more



No one can prove whether sexual and racial harassment and assault — and gay-bashing, anti-Semitism, attacks against the disabled, etc. — are more prevalent now than they were 10 years ago...

important issues, especially for women, lesbians and gays, and minorities.

Subtle Discrimination

"We just did not find any qualified blacks over this last decade. It seems that no professor in our section ran into any black professional anywhere."

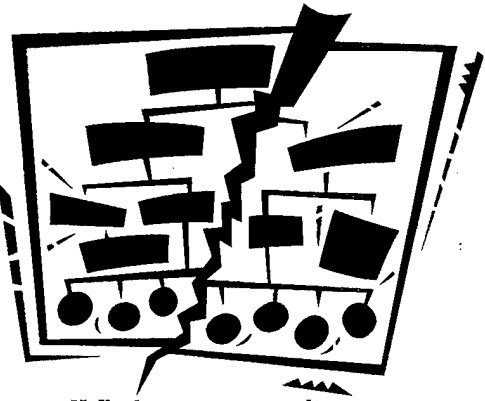
The head of the search committee mused to himself... "Anna is pretty aggressive. I wonder why it is that she is single...and Harriet so shy. I just don't think they will fit in. Besides, Harriet will probably just leave us anyway to follow her husband."

Subtle discrimination is made up of covert, ephemeral or apparently trivial events that are frequently unrecognized by the perpetrator and often not evident to the person injured by them. By definition they are not legally actionable; they happen wherever people are perceived to be "different." These "micro-inequities" interfere with equal opportunity by excluding the person who is different and by interfering with that person's self-confidence and productivity.

I studied these events in some depth for two decades. New data on this subject still arrive in my office nearly every day. I hear of racist and anti-gay graffiti, of ethnic jokes in a lab, of someone failing to introduce a minority person, or confusing the names of two people of color. I hear of someone ascribing the work or idea of a woman to a nearby male, of people who think exclusively of male contacts when a job or coveted assignment is open, of someone's obvious discomfort at being assigned to travel with a woman or a person of another race. I hear of women who take a different path to class because of a man who seems to hang around on the path. I hear of a minority employee not notified of a vital matter at work. I hear of a woman trainee assigned to a certain office she did not want to be in, "because the man in that office was lonely and wanted to be assigned with a woman."

Micro-inequities can predispose their perpetrators toward yet more serious discrimination and may block helpful behavior. They lower expectations of excellence, interfere with cross-race and cross-gender evaluation, and take up time and energy, both from the target and from the

people to whom the target appeals for help. Subtle discrimination corrodes continuously in the same places — skin color and gender — which I believe to be different from the effects



While extraordinary commitment from the top is key to overcoming subtle discrimination within an institution, it also is essential in areas where progress depends on working together with government and other institutions.

produced by the more random meanness experienced by white males.

It is hard to prepare for — or deal with — micro-inequities since individual instances are not easily predictable and are, by definition, irrational. They are hard to detect in part because they are infinitely various and often not intentional. They often seem petty, so the target often does not know how to deal with them without seeming shrewish. However, these subtle inequities may have great effect. Since many women of whatever race and minority men were socialized to be super-sensitive to disap-

proval or a possible threat from white males, they may "over-react," at least internally, to apparently minor slights.

It can be hard to stop certain kinds of micro-inequities because they are endemic and even reinforced by white male society — like sexy calendars and anti-gay, ethnic and "spaz" jokes. This endemic characteristic also produces inadvertent negative role-modeling, because minority men and women in general see so many other people like themselves put down. And it puts an extra burden on the rare senior women and minorities who are available as role models, because they must deal with their own pain as well as the pain of junior colleagues who are like themselves.

Many small studies indicate that women do randomly as well at MIT as men, over time. However, most data suggest that the stress level is higher for women — and for minority men. I believe this extra stress is real, and that much of it is due to concerns about family, safety and security, and to the constant experience of playing on a field that feels a bit tilted by subtle discrimination.

What — If Anything — Helps?

Extraordinary commitment from the top. Where the senior officers of any institution are themselves exceptionally committed to diversity, one may suddenly see real change. This is true for presidents and provosts, but also true of vice presidents, deans and department heads. I have repeatedly seen a department that had no women suddenly diversify after a new and committed head — or outstanding senior faculty member — decided to make a difference. A department may suddenly blossom with half a dozen, first-class black and Latino graduate students where there had been none. In one notable example, the appointment of a new vice president of a major institution resulted within a year in the appointment of nearly 20 minority staff where there had been

almost none. A number of notable examples abound where universities recruited women and African-American faculty.

While extraordinary commitment from the top is key to overcoming subtle discrimination within an institution, it also is essential in areas where progress depends on working together with government and other institutions. In the long run, no one employer can deal adequately with either external safety or support to families. The United States must join the other Western industrialized nations in establishing a supportive national family policy, and state and local governments must work more effectively regarding crime. Neither will happen without major pressure from chief executives working together.

Steady-state, personalized recruitment. The best faculty appointments result from individually courting the



Committed recruiters of women and minorities often prove to be outstanding mentors.

best people, year in and year out, sometimes over a number of years. Such people are courted one-on-one through invitations, mutual visits, phone calls, good deals and much



Networks provide skills training and contacts for their members, they enhance mentoring, help to identify complaints and concerns, and help teach the institution what it needs to know to change its structures appropriately.

collegiality. This kind of courtship also works for fostering diversity, as well it should; it ranks as the favored mode in every institution for getting the best people. A department head or other senior faculty person becomes an effective "entrepreneurial recruiter," calling 20 or 30 other schools to identify the best candidates, personally inviting a woman candidate, or overseeing the courtship of a minority person, in the same way a Nobel Prize winner might be courted.

This approach works for many reasons. It overcomes the otherwise natural — and subtly discriminatory — tendency of most people to recruit only people like themselves, and it is likely to result in "cluster" hiring, bringing in more than one woman or minority male, which can make life easier

for those in the cluster. A steady-state search for top-notch minority members and women, across a wide sweep of possible slots, improves the chances of success compared to a single advertising campaign for one slot. And success builds on success. The next non-traditional person hears that the given department is a "good one" and is more likely to accept an offer from that department. And the "entrepreneur" who is always searching is seen as credible and serious; minorities of both genders and white women will begin to refer their best minority and female colleagues to that department. Finally, a steady-state, personalized search is not only more likely to result in attracting the very best person, but is more likely to result in a continued commitment to the success of the individual recruited.

Mentoring. By definition, there is no possibility in traditionally white male institutions that a non-traditional person can have the same possibilities for role models as would a white male. On the other hand, mentoring can and should be equally available to all. Committed recruiters of women and minorities often prove to be outstanding mentors. However, since most people need more than one mentor, and since white women and minorities of both genders often encounter special problems in finding adequate white male mentor-ship, an academic institution deliberately needs to foster this function if it is to work satisfactorily. My recommendation is that this be done rather loosely — by exhorting senior faculty to be mentors, by telling all junior people that the responsibility is theirs to find mentors, and by holding department heads responsible for knowing who the mentors are for all members of their departments — *but not by one-on-one assignment.*

Mentoring includes many functions: opening doors, coaching, sponsorship, cheerleading, supervision, giving a sense of history, helping people set standards and providing

inspiration. Mentoring also may include helping an institution to understand — and to change — its structures for meeting the needs of new people. For example, much of the impetus toward supporting family needs, and for harassment and safety programs, as well as for diversity training, has come from powerful white male mentors who see these changes as necessary for the success of mi-



Some people prefer to handle their problems directly. Some want informal or formal third-party intervention, while others want their institution to take a generic approach, like a training program, to stop a specific offender.

norities and women with whom they work. Effective mentoring is a particularly powerful antidote to subtle discrimination.

Networks. Networks of women, of African-Americans, of Latinos, and of other minorities are an indispensable part of an effective system to foster diversity in academe for many of the same reasons that professional associations in general are essential to professional success. Networks pro-

vide skills training and contacts for their members, they enhance mentoring, help to identify complaints and concerns, and help teach the institution what it needs to know to change its structures appropriately. Networks provide comfort and personal support, as well as providing ideas to help with family needs. Not only can they help counter the damage caused by subtle discrimination, they can help enhance safe and harassment-free environments. If they are regularly in touch with senior administrators in a collegial and mutually respectful way, networks can provide a gyroscope for an institution in a generation of turbulence, helping channel activist energy into responsible paths and helping to highlight the serious needs of new members of the community. Networks have a happy history of working for changes that benefit everyone.

Networks, however, must be voluntary; no individual should be "expected to join." Networks should be supported openly by the institution so that those who do join are not ostracized. Ideally, they will open some of their events to everyone, in order to not only be of service to all, but to gain ideas from everyone.

Family support programs. Since support to family life is among the potentially most expensive benefits an employer can provide, it is essential that academic institutions receive expert advice in this area, and that employers be forthcoming about their budgetary constraints. However, much still can be done. Cost-effective ideas include: flexible schedules; supportive maternity and family leave policies (including the possibility of proportionately lowered salaries in return for some weeks, or even months, each year of planned and voluntary leave without pay); part-time tenure and tenure ladders; shared jobs; dependent care information and referral; and support for nursing mothers (a place to nurse, breast pumps, etc.).

The single most important support to family life is a public validation of the need for some flexibility and approval for males — especially white males — who share dependent care. Changing institutional expectations for white males in this arena is critical to ending one source of subtle discrimination against women and minorities — and, of course, critical to providing enough dependent care. Thus, leadership on this issue by senior administrators in each institution — and also in Washington — is essential.

A dispute-resolution system that provides both options — and choice of options. There is much evidence that all women — as well as minority and white males — have widely varying ideas of what they are willing to do if faced with an issue of overt or subtle discrimination. Some will talk only with a person they know, while others will only speak with someone they do not know. Some will talk only with a person of the same race and gender, while others “just want an expert.”

Some people are only satisfied with clear-cut, formal grievance procedures, while others hate formal grievances no matter what the problem may be. Such people simply dislike rights-based procedures and tend toward interest-based problem-solving: What is best for me in this situation? What do the other person and I want to have happen? Some offensive acts are subtle, ambiguous or idiosyncratic; women of every race and Asian-American men are particularly likely to ask for informal methods to deal with such offenses.

Some people prefer to handle their problems directly. Some want informal or formal third-party intervention, while others want their institution to take a generic approach, like a training program, to stop a specific offender. Some do — and some do not — want a public record made of their complaint or dispute.



Sophisticated, well-trained and well-deployed campus police can make a major difference to the security of women, minorities and gays at our colleges and universities.

The net result is that if an academic institution wants to deal well with disputes and complaints from a diverse population, it must offer a *variety of options* to people with problems. These options ordinarily include: support to deal directly with the problem (in person or on paper); informal problem-solving; formal mediation; formal grievance channels; generic problem prevention and resolution; and mechanisms for changing the system. There should be men and women of various ethnic backgrounds available to handle the complaints.

Safety programs. Sophisticated, well-trained and well-deployed campus police can make a major difference to the security of women, minorities and gays at our colleges and universities. Requirements include a diverse police force and special training involving a wide range of issues: rape, racial assault, harassment, stalking, gay-bashing, self-defense, ob-

scene phone calls and threats, campus demonstrations, requests for restraining orders, domestic violence and home safety devices. If the campus police then routinely share their expertise in office/laboratory/dormitory crime prevention, and provide extensive victim assistance, they can alleviate some of the safety concerns of the minority, gay and female members of the community.

Here again, to address problems of safety and security adequately for women and minorities institutions must not only work together with each other, but with various levels of government.

Training programs-diversity programs. An institution that wishes to diminish subtle — and overt — discrimination, to create a safe and secure work and educational environment, and to provide some modicum of support to the idea of family life must have diversity programs to succeed. Positively oriented short-term training — like Valuing Differences and Total Quality Management programs, which mix different kinds of people together in teams working toward a common goal — are likely to help diminish subtle prejudice.

Women's studies and race relations courses also help explore these questions more extensively. Harassment prevention is absolutely essential and should cover all forms of harassment and violence in relationships. Personal safety courses, parenting and other dependent-care workshops are all essential if the academic environment is to change.

None of these recommendations is specially mandated by “affirmative action” as conventionally, bureaucratically understood. But all are consonant with the spirit of affirmative action and, in the long run, all are likely to benefit men as well as women, whites as well as minorities. And all are necessary if affirmative action is really going to work.

A PERSPECTIVE ON THE CHANGING ACQUISITION ENVIRONMENT

How One Small Business Copes with the Effects of a Shrinking Defense Budget

Mark E. Reavis

Change in the Department of Defense is analogous to an elephant on a water bed; a shift in position may not seem like a big deal to the elephant, but it could have disastrous implications for his smaller bed-fellows. Similarly, small businesses often find themselves tossed in the wake of the forces transforming the Department of Defense's (DoD) acquisition culture. The large defense contractors were consistent vocal proponents of acquisition reform and helped shape many of the policy changes in progress today. Although there remains a strong commitment among DoD's policymakers to ensure the survival of small business as a class, changes in the defense environment are causing individual small businesses to re-examine their relationship with the government as a customer.

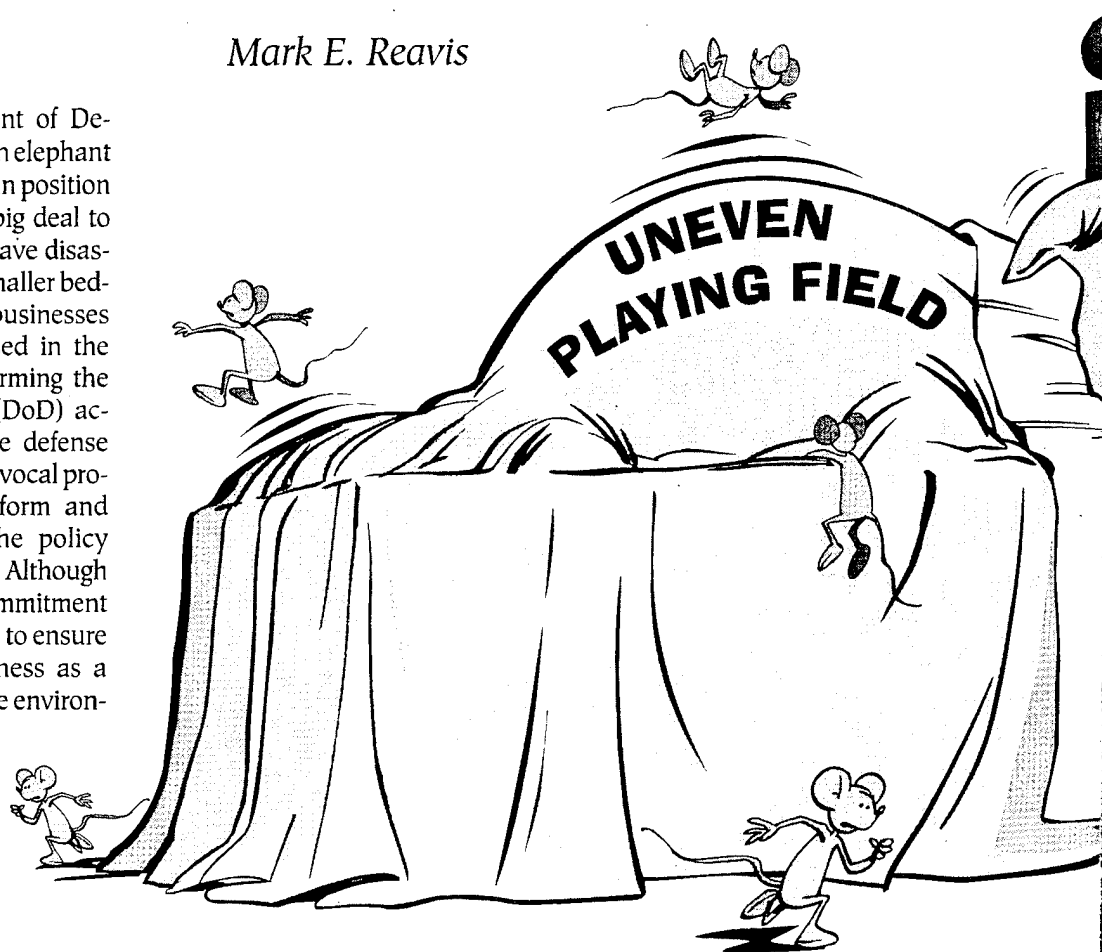
A Look at One Small Business

Dynetics Inc. is an employee-owned small business with corporate

Mr. Reavis is an industrial engineer employed by the Army's Javelin Project Office at Redstone Arsenal, Ala. He is also a registered professional engineer and a graduate of PMC 94-2.

headquarters located in Huntsville, Ala. Named the Small Business Administration's Small Business Prime Contractor of the Year in 1994, Dynetics has approximately 300 employees and annual revenues of \$30 million. Since its incorporation in 1974, Dynetics' business base has consisted of research, development

and engineering support to government agencies and commercial firms. Primary areas of expertise are systems engineering, sensor design, radars, simulation and program management. Dynetics used a strategic planning process as a means of broadening its business base in the commercial sector, through the development of com-



mercial products and the sale of technical services to commercial industry.

I recently had the opportunity to discuss the effects of the shrinking defense budget and acquisition reform with Dr. Marc Bendickson, President of Dynetics, Inc.

On Decreasing Defense Budgets

Mr. Reavis: The Defense budget declined with respect to buying power every year since 1985. What was Dynetics' response to this shrinking of your largest market?



Dr. Bendickson: Initially, our focus was on working harder and improving the quality of our services and products. We invested in capital equipment to make our products more attractive and professional looking. Then we set about finding new related customers and markets, while carefully constraining our growth. In 1990, we expanded our focus to include diversification within the DoD market and to pursue commercial product opportunities. However, 3 years later

our reliance on government contracts was still near 100 percent, and we were forced to lay off 7 percent of our staff in early 1993.

Mr. Reavis: As defense dollars become more scarce, we are starting to see changes in the way large and small businesses decide upon which areas they will pursue. How has this affected the nature of competition for small businesses?

Dr. Bendickson: We look at competition on three levels:

1. *Unrestricted Procurements.* Large businesses are now pursuing many of the unrestricted procurements they did not pursue in the past — either because they were too small in dollar value to be worth their effort, or because they might contain potential exclusions for follow-on hardware or system development.

2. *Small and Disadvantaged Business (8a) Procurements.* These strictly protected procurements only provide for limited participation by non-disadvantaged small businesses (SDB), in either a teaming relationship or subcontractor role. Participation in those procurements is not a viable path for our survival or growth.

3. *Small Business Set-asides.* These are the only procurements that offer small businesses any encouragement. They give us real opportunity. However, these procurements are very competitive — the number of small businesses competing for the limited number of set-aside dollars is very high. Also, SDBs and 8a companies are entering this market, providing even more competition.

Mr. Reavis: Funding instability and changing defense priorities have always been challenges to program management, within the government and for industry. With fewer dollars available, managers are pressed to cut costs wherever possible. Often this means canceling intended procure-

ments or electing not to exercise contract options. How are small businesses affected by this sort of belt tightening?

Dr. Bendickson: Small businesses have limited quote and proposal budgets to pursue new efforts. A lot of paid and unpaid time goes into the preparation of a proposal that will be competitive in today's environment. However, many efforts result in no or low returns for all the hard work and investment. Some efforts don't get funded (no award is made or the procurement is canceled) after a proposal is submitted, and some efforts get awarded, but are only funded at a fraction of the overall contract potential. These realities drive up the threshold rate of return on investment to unacceptable levels for some efforts that we are well qualified to pursue. Small businesses can be enticed into adopting a "shotgun" strategy, going after more and more procurements with lower and lower probabilities of winning. This diminishes their ability to do their best work by going after funded programs that match their core competencies. In a time where focus of purpose, mission and customers is considered the most sound business strategy, small businesses are often tempted to be broader than many of their resources can support.

On Acquisition Reform

Mr. Reavis: How has the recent emphasis on dual use and commercialization of defense technology influenced small business? What barriers remain to commercial application of defense-related technologies?

Dr. Bendickson: There was a lot of encouragement from the upper levels of government for the dual use and commercialization of DoD technology. However, there are still barriers, especially in the way we do business — we must modify our style, approach and standards to compete in the commercial environment. As we explore opportunities in commercial markets,

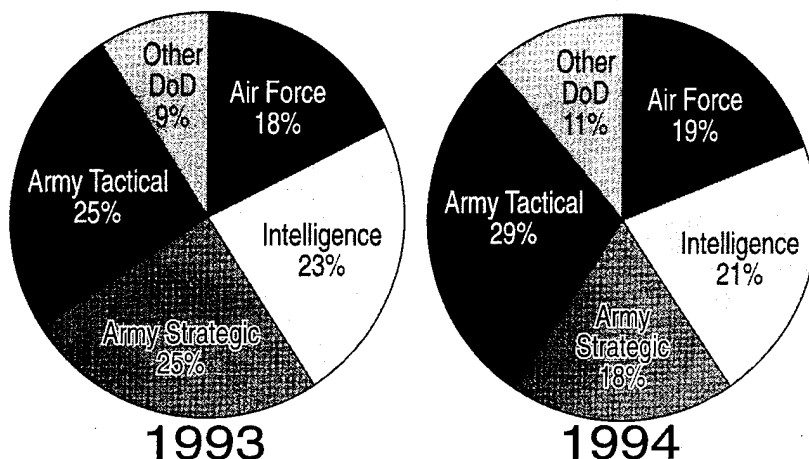
we must learn to be quicker to market with our products and services.

Most small research and development (R&D) contractors do not have the supporting people to market products and provide service to customers as expected with commercial products. Some of our internal cultural barriers involve dealing with specifications that are often much softer in a commercial venture, so we must resist the temptation to over-design. We found that people who performed well in DoD R&D may not be well suited to perform commercial work. Business accounting procedures for government-funded work and commercially funded work often conflict, making it difficult for companies with limited facilities and resources to manage for different types of customers.

Mr. Reavis: Much of what is driving the acquisition reform movement is the realization that we, as a country, are shifting from a mass production age to an information age, where government and industry will be required to exhibit agility in coping with the changing demands of our environment. The use of electronic data interchange (EDI) in the transmission of requests for proposal (RFP) and in the submission of deliverables is one of the tools being sold to bring DoD into the information age. Has EDI cut proposal costs and turn-around time, or are we still on the bleeding edge of technology?

Dr. Bendickson: The change to electronic transmission of requirements and responses is being gradually felt. There were some slight savings in terms of paper transmitted and the need for paper storage. It seems the most significant savings so far was felt by the government as they increasingly require cost proposals be submitted electronically, allowing government cost analysts to evaluate cost submissions without having to re-enter data. As RFPs are transmitted electronically, we are concerned about loss of data in RFPs and other solicita-

FIGURE. Dynetics Business Base



tions. On occasion, we receive RFPs electronically with pages and paragraphs missing, so we still need to confirm content with the paper version.

Mr. Reavis: Have you had any experience yet with the shift to commercial specifications and standards in government procurement, and how does it impact the economics of how you will do business in the future?

Dr. Bendickson: We are currently working with specifications that are hybrids—a combination of DoD standards and best commercial practices — and with pure commercial standards that are, in some cases, much more relaxed than their government counterparts. Most of the commercial business we are pursuing is in the high-tech end of commercial products, so the standards tend to be similar to government standards. For example, the work we do for the automotive industry requires stringent standards for reliability and safety, as well as most of the same standards as DoD in other areas.

Mr. Reavis: The arms-length relationship between the government and its contractors is said to be a thing of the past. A relationship more closely resembling a partnership will define future government and industry relationships. It will no longer be economically viable to maintain rigorous

oversight of such limited resources. Have you seen any evidence of this change in culture, and do you see it as applicable to the small business environment?

Dr. Bendickson: I see the partnership roles evolving with certain customers and projects. Team atmospheres were created where industry and government personnel share technical responsibilities and work jointly on projects. However, the contractual process has not caught up with this team environment to the point where we share requirements definition and technical performance. Ultimately, the industry part of the team is still accountable for the job and must meet all the traditional performance requirements.

Conclusion

The experiences of **Dr. Bendickson** and his staff at Dynetics are not atypical of other small businesses required to adapt to a shrinking defense market and a new, evolving relationship with their customers. As with any type of change, an element of uncertainty remains, and the effects on all stakeholders must be considered, especially when such sweeping changes are made in an environment of decreasing resources. The future of our national defense community will depend upon government and industry working together to form a high-quality, streamlined and responsive partnership.

U.S. DEFENSE ACQUISITION COMMUNITY COOPERATES WITH PACRIM NATIONS

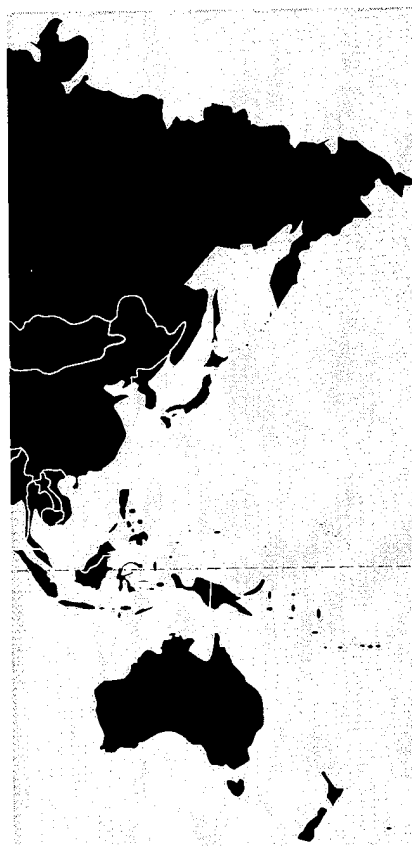
A Surprising International Success Story

Richard Kwatnoski

In 1992 the Defense Systems Management College (DSMC) began a study of international cooperative defense acquisition projects with the U.S. and countries in the Pacific Rim (PACRIM). This was the third of three related research studies of cooperative acquisition projects conducted during the past 10 years. The first and second were studies of U.S./NATO-Europe projects completed in 1985 and 1990.^{1,2} Responding to increasing student demand for information on PACRIM projects, DSMC took the lead for the third research study. Our research objectives follow:

- Describe the current reality of cooperative projects in the PACRIM.
- Determine the prescription for success by identifying barriers to and facilitators of cooperation.
- Examine similarities and differences between PACRIM and NATO-Europe Projects.

The complete results of the study have been submitted as a potential article for a future issue of *Acquisition Review Quarterly*. The purpose of this article is to report on the country



notes that we developed during the study.

Notes on Cooperation

First and foremost, there is no equivalent to NATO in the PACRIM. No vast NATO-type infrastructure is in place to support cooperative activities with PACRIM nations. With few exceptions,³ we conduct our cooperative acquisition projects with Australia,

Japan and South Korea bilaterally, and will continue to do so for the foreseeable future. The U.S. enjoys favorable defense trade balances with the three nations, and is therefore pressured to extend generous terms in cooperation. However, any assumptions or stereotypical thinking regarding the PACRIM nations should be closely examined.

Each nation is different — Japan is not like Korea; Australia is different in many ways from the U.S. There can be enormous cultural differences between each nation as well as management styles and motivations for cooperative acquisition. We must also be keenly aware of “European Strings,” which may tie our hands in the PACRIM because of prior commitments made in European projects.

Interestingly, the U.S. staff personnel interviewed perceived that our system was the most problematic in successful cooperative acquisition. This was especially pronounced in our legal system (e.g., treatment of intellectual property rights) and acquisition system (e.g., competition policies).

Australia

Australia is geographically a PACRIM nation, but is populated primarily with transplanted Europeans. For the U.S., Australia is culturally

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the easiest nation to work with in the PACRIM, if not in the world. Further smoothing relations, Australia is not viewed as a competitor to the United States, whether economically or in the defense export market. The Australian defense budget is small in comparison with that of the U.S., but they maintain a relatively large portion for research. Therefore, Australia can be viewed as strong on research, but weaker on development.

They seek more cooperative projects with the U.S. to develop outlets for their research technology, and to attain rational production quantities. Their rationale for cooperation is to access technology, promote their technology, realize economics of scale, promote interoperability, and encourage industrial participation with "residual" capability. Residual capability refers to an Australian motivation to further build their industrial base, and to examine every potential cooperative project for the industrial capability retained in Australia after project completion. All, except the last, are identical to U.S. motivations for cooperation.

Australia explores cooperative project opportunities through a variety of ways. These include the structural process (attaches, exchange officers, etc.); multilateral forums — American-British-Canadian-Australian or ABCA; The Technical Cooperation Program (TTCP); 5 Nations, etc.; senior national representative meetings; and project teams specially formed to examine the pros and cons of the cooperative project.

Australia cooperates with many nations beside the U.S.: New Zealand to attain rational production quantities for many types of defense material; and the United Kingdom, primarily on naval projects. Australia desires to strengthen local ties and has enjoyed successes in joint exercises, logistics and sales; however, they have no active armaments cooperation projects as of this writing.

Each nation is different — Japan is not like Korea; Australia is different in many ways from the U.S. There can be enormous cultural differences between each nation as well as management styles and motivations for cooperative acquisition.

Australians cite the following as difficulties in cooperating with the U.S. There often seems to be an issue on release of technical information. They complain of being "ambushed by the many" — a reference to the large number of players in the U.S. approval process. They acknowledge commitment at the working level, but lacking in the staff and financial community. The "not in service or NIS syndrome" was mentioned. This is an Australian perception that if the defense article is "NIS" in Australia, then the U.S. is not interested. Also mentioned as difficulties were the great distance between the two nations, the 12-hour time difference, differing national priorities, and the size mismatch on production rates and quantities.

Due to our long history of military cooperation, lack of economic competition and common motivations for armaments cooperation, few difficult cooperation issues exist from the U.S. perspective. Access to software source

codes is an issue, but the U.S. historically does not release these to any nation. Australia seems like a natural candidate for expanded cooperation.

Japan

An understanding of the potential for cooperative acquisition projects with Japan must begin with a review and understanding of Japanese policies regarding their defense relationship with the United States. These policies include the Japanese "No War" Constitution (post World War II), the Mutual Defense Assistance Agreement (1954), the Japan-U.S. Security Treaty (1960), the Three Principles on Arms Export (1967), Government Policy Guidelines on Arms Export (1976), and the Agreement on Technology Exchange (1983). Basically these policies preclude Japan from exporting armaments, and from sharing defense technology with any nation other than the U.S.

An anti-military sentiment permeates Japan, and to further confound cooperation an anti-Japanese military sentiment in neighboring Far Eastern nations is prevalent. Deep cultural differences lie between us. The economic difficulties between the U.S. and Japan are reported almost daily in the American press. In summary, many external factors hinder the formation of cooperative acquisition projects with Japan.

The Japanese Defense Agency (JDA) conducts very little in-home research, but cooperation in research is the most feasible area. This is because the JDA does not purchase unlimited rights to intellectual property associated with defense articles, unlike the U.S. practice. The Japanese favor classified agreements, which further complicates cooperation. In examining the possibility of cooperation, they explore the following four "merits":

- Appropriate for the Japanese environment.
- Improvements after procurement

possible using Japanese technology.

- Long-term logistics support available.
- Enhances the growth of the Japanese defense industrial base and technology.

While Japanese indigenous Research, Development, Test and Evaluation is of paramount importance, the Japanese view some cooperation with the U.S. as "necessary." Japan responds to U.S. initiatives in cooperation, seldom if ever initiating cooperative acquisition projects.

Issues that may arise in cooperation with Japan include technology transfer and control (especially software), differing capability of two defense industrial bases, joint ownership of intellectual property rights, and technology flowback. The last issue was persistent due to disagreement over the meaning of native Japanese technology and the requirements to provide this, or flow this technology back to the U.S.

Real cooperation in defense acquisition is only possible with the United States. Japan favors the Data Exchange Agreements and the Systems and Technology Forum for identifying cooperative opportunities. The future of cooperative acquisition projects will be on a case-by-case basis, with clear and complementary motivations often lacking.

South Korea

Recent moves toward democracy in South Korea reduced the influence of the military. However, defense industry still responds to government direction. High-technology transfers to South Korea are considered in the context of potential conflict or reunification with North Korea. South Korea does little pure research, and therefore favors coproduction. All cooperative projects must have application.

As with Japan, deep cultural differences exist between the U.S. and

Korea. To an American, Korean progress from point A to point B is never a straight line. Anticipate the Koreans to pay great attention to detail, and to put almost everything in writing. Saving face and avoiding fault are vitally important to the South Koreans. Cooperation with the Koreans can be personality-dependent. Anticipate changes to the project with changes in key personnel. South Koreans place emphasis on social activities, often at the expense of administrative support. Anticipate the need to provide administrative support, even in the translation of English to Korean. Also anticipate a strong emphasis on adhering to schedules.

South Koreans view cooperative projects with the U.S. as easy to start, but difficult to continue. They also view the U.S. as reluctant to make cooperative projects with South Korea work. Therefore, they speak of "turning our eyes" — a euphemism for more government and industrial defense cooperation with other nations, primarily France and Germany. However they still claim to be actively seeking cooperation with the U.S.

The issues which typically arise in U.S.-South Korean cooperative projects include technology transfer and control, third-party sales, intellectual property rights, total project cost and Korean cost share, and the transfer of research work to a defined project. The Koreans favor Data Exchange Agreements and the Engineer Scientist Exchange Program for identifying cooperative projects.

PACRIM's Potential

Each nation merits a special remark. Japan is unique. Japan is most difficult to work with because of managerial differences and their pacifist policies. However, Japan is technologically mature, and therefore offers the potential for significant mutual benefit from cooperation. The conundrum of cooperation with Japan in acquisition is that it is simultaneously politically driven and politically opposed.

Cooperation with South Korea will be clouded for the near future due to our difficulties with North Korea and the uncertainties associated with reunification.

With respect to cooperation in acquisition with Australia, it remains difficult to understand why there is not more. While some difficulties exist, we found no clear reason for the minimal amount of cooperative projects.

DSMC's International Courses

On October 1, 1994, all of DSMC's three international acquisition courses were officially identified as "assignment-specific Defense Acquisition University courses" by the Under Secretary of Defense for Acquisition and Technology. It remains to be seen how this will be implemented within the acquisition workforce. The Services have already expressed a desire to send nearly 10,000 acquisition workforce personnel to our international courses. We believe this will bring about a grass-roots revolution in our ability to engage in international projects. The ultimate solution will be to have certified international acquisition corps personnel managing all of DoD's international projects and related activities.

Endnotes

1. C. Michael Farr, "An Investigation of Issues Related to Success or Failure in the Management of International Cooperative Projects," Ph.D. dissertation, University of North Carolina, Chapel Hill, 1985.
2. C. Michael Farr, *Managing International Cooperative Projects: Rx for Success*, Chapter 6, "Global Arms Production," University Press of America, Inc., Lanham, Md., 1992.
3. The exception is Australia, which participates both bilaterally and multilaterally with the U.S., United Kingdom, Canada and New Zealand.

"INCENTIVIZING" — AN EFFECTIVE MOTIVATOR?

Grappling with Defense Contractor Incentive Issues

Wilson Summers IV

What motivates defense contractors to perform government work at a high level of quality, while simultaneously controlling cost and delivering on schedule? If the government knew the answer to this question, it could concentrate on those motives. However, what motivates an individual contractor is not an easy question to answer.

During my career, I worked for a defense contractor and the government, on both the administrative and buying sides of acquisition. In addition, I spent the last 8 years at the Defense Systems Management College grappling with some of these issues. From these experiences, I drew certain conclusions that will be the focus of this article. First, I'll discuss what I perceive as motivators for defense contractors, and then discuss how effectively the Government capitalizes on those motivators.

What Motivates Defense Contractors?

The natural tendency for many government personnel is to come to the obvious conclusion that **profit** is the dominant motivating force. And

Mr. Summers is a Professor of Contract Management, DSMC, and is currently a student at the Industrial College of the Armed Forces.



yes, this is eventually true of all contractors. I can't imagine too many companies in business not looking to make a profit. However, on individual contracts, which is where I'll focus this article, profit may not be a significant incentive or an incentive at all. I contend that other issues need to be considered.

Follow - On Contracts

Many contractors took on government development contracts in the past with the goal of ultimately receiving the production contract. This is especially true in a competitive environment. In most systems acquisitions, several contractors are involved in the development phase of a weapon

system. Normally, only those that are participating in the development will be considered for selection as the production contractor. Production of a system is where the largest potential exists for a return on investment. Therefore, if a contractor hopes to win the production contract, its involvement with the development is critical. This rather than profit then, is sometimes the true motivation at the development phase.

Survivability

Cash flowing through a company generated by sales is the life blood of the company. If sales are not generated, normally assets must be reduced for the company to survive in the

short run. Many times, a reduction in the labor force is the first asset reduced. These ups and downs can affect morale, training dollars, hiring and recruitment and overall capability. Thus, government contractors bid and perform these contracts at low or negative profit margins in order to sustain cash flow. The company survives for the near term with its workforce positioned for future business opportunities.

Overhead Cost

Defense contractors are generally able to allocate allowable overhead cost to all their government contracts.



The more government contracts a contractor has on the books, the larger the base that these costs can be spread against, thus reducing the overhead rates. With lower overhead rates, a contractor is more competitive on bidding future business. Also, on fixed-price work already under contract, overhead costs are reduced, thus creating a potential for additional profit. Therefore, capturing additional government contracts at low or no profit is another potential motivator for a defense contractor.

New Technology

Using a government contract to gain a new capability or technology constitutes another motivator. This is

especially true when the contractor anticipates generating business through other government sales, Foreign Military Sales or commercial sales. Through a government contract, the contractor acquires a new capability. The contractor does not have to expend its own funds to obtain this capability. Therefore, profit is not the dominant motivator.

Reputation

If a contractor is unknown to government procurement personnel, establishing a good performance record on a government supply or service could earn future business. With the new added emphasis on past performance in source selections, this would also hold true for known contractors.

Eliminate Competition

A contractor might be motivated to outbid his competition on a particular item to capture the market. Thus, on future acquisitions, that contractor would be in a dominant or sole-source position. In this type of environment, a contractor will most likely accept a reduced profit margin or a net loss in the short term to realize larger profits in the future.

Changes

A contractor might be motivated to "buy-in" on an ill-defined contract in order to generate profit on change activity while in a sole-source bargaining position. In the past, this was typical of many fixed-price development contracts, with limited definition resulting in substantial cost growth.

Government Guidance

Before analyzing how effectively the government capitalizes on contractor motivators, a review of the government's published guidance on the subject of incentives is important. The primary guidance for all government acquisition personnel is the Federal Acquisition Regulation (FAR) system. It consists of the FAR, which is the primary document, and agency regulations that supplement the FAR.

A second key document is the *Armed Services Pricing Manual (ASPM)*, designed to guide Department of Defense (DoD) personnel engaged in the analysis and negotiation of contract prices. A third document, *Incentive Contracting Guide*, developed by DoD and the National Aeronautical and Space Administration, is probably the premier document on incentive contracting. However, it was last published in 1969, which limits its accessibility. To date, few acquisition personnel have copies.

The FAR goes through a description of contract types with emphasis on the profit motive. Most of the contract types authorized by the FAR have structures that place incentives on the contractor's ability to control cost. The contractor has the opportunity to earn additional profit margin (percentage of cost) if total costs are less than a predetermined estimated cost, target cost or fixed price in the case of a firm, fixed-price contract.

The FAR also mentions the use of technical performance and delivery incentives for use with fixed-price incentive contracts and cost-plus incentive fee contracts. It also describes the use of cost-plus award fee contracts and award fee provisions by inducing the contractor to improve poor performance or to continue good performance in subjective areas that cannot be measured.¹

These contract types, described in the FAR, are designed to increase or decrease the contractor's profit margin, as determined by performance against pre-set objectives — predominantly cost objectives. The FAR does not advise the contract administrator on how to structure these various types of contracts; however, the Defense Federal Acquisition Regulation Supplement does provide some guidance on the use of award fees.

The ASPM gives limited guidance on how to structure cost-only incentives, but does not give guidance on

structuring performance, schedule and award fee incentives.

The *Incentive Contracting Guide* is the most comprehensive in describing how to structure cost, performance and schedule incentives. But as I mentioned earlier, the Guide is not in the hands of most contract administrators, was last updated in 1969, and contains some areas that are difficult for the novice to comprehend.

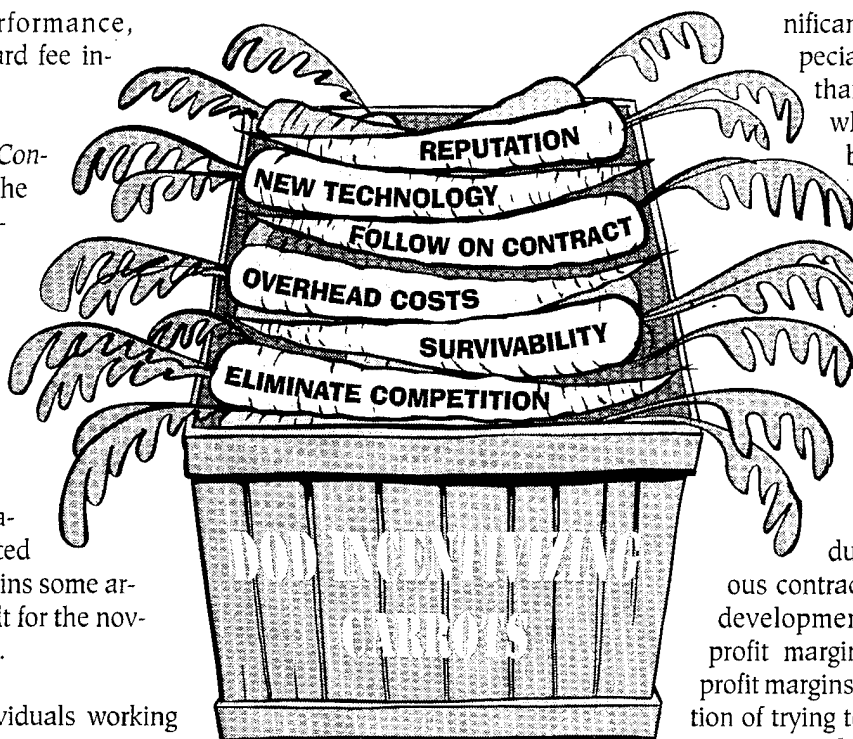
Almost all individuals working in the contracting arena get some type of training early in their careers, encompassing contract types and the use of incentives. For the most part, this training falls far short of sufficient comprehensive tools for structuring effective motivators for contractors.

Government's Use of Incentives

Many individuals within the government recognize that motivators other than profit affect cost, schedule and performance. However, they also realize the illusiveness of trying to measure the impact of these type motivators. Therefore, the underlying philosophy associated with how to motivate a contractor is the application of increasing or decreasing the profit potential.

The government refers to or expresses profit as a percentage of cost. A contractor, on the other hand, does not use this as a measurement of profitability. The contractor would evaluate profitability as Return on Investment, Return on Sales, Return on Assets or Return on Equity.

Let's look at the Return used most frequently by contractors: Return on Investment (ROI). This is calculated



by multiplying profit margin (net income/sales) by asset turnover (sales/total assets). The first half of this equation is very similar to the government's definition of profit, but the second half is mostly overlooked in determining contractor motivators. It deals with how efficiently and effectively the contractor uses its assets to generate sales.

If a contractor has breaks in production, idle facilities, inefficient production quantities, stretch-outs, layoffs, strikes, excessive rework and repair, or any other inhibitor to using assets effectively, its profitability is negatively affected. Therefore, government personnel need to assess the entire aspect of profitability if they truly want to effectively motivate defense contractors.

Although the majority of governmental incentives were centered around profit, reputation is growing as an effective motivator. With more emphasis placed upon contractor past performance in selecting contractors for future business, good cost, schedule adherence and performance on existing contracts now becomes a sig-

nificant motivator. This is especially relevant in other than sealed bid awards where selection is made based on the best value for the government, not on lowest bid price.

Another previously mentioned motivator, which the government has used effectively in the past, is the lure of the follow-on production award. Numerous contractors have preformed development contracts at low profit margins, or past negative profit margins with the sole motivation of trying to win the production contract. Much of this was done under firm, fixed-price contracts. Therefore, the contractor winning the follow-on award needed to maximize its profit potential on the production contract to reduce losses sustained during development. The contractor or contractors losing the follow-on could face significant financial difficulties.

Looking Forward

The government uses incentives to motivate its contractors, but perhaps we need to do more in assessing how best to tailor incentives to individual contractors. Taking a harder look at profitability instead of just profit margin would enhance the effectiveness of the incentive structure. When you evaluate contractor motivators, consider survival, follow-ons, overhead and competition. The brightest spot, from my perspective, is the emphasis on past performance. Reward those contractors that perform well on government contracts with future work — and that, ultimately, will prove to be the truly effective motivator.

Reference

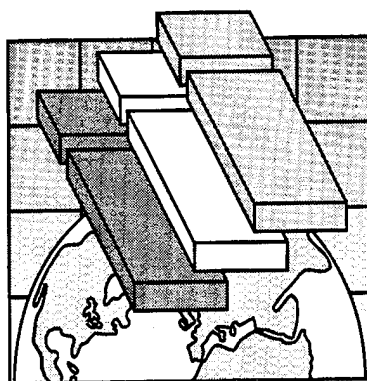
Federal Acquisition Regulation 16.404-2.

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Representative William F. Clinger, Jr., (R-Pa.) (invited)
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THE COST OF LOSING CONTROL

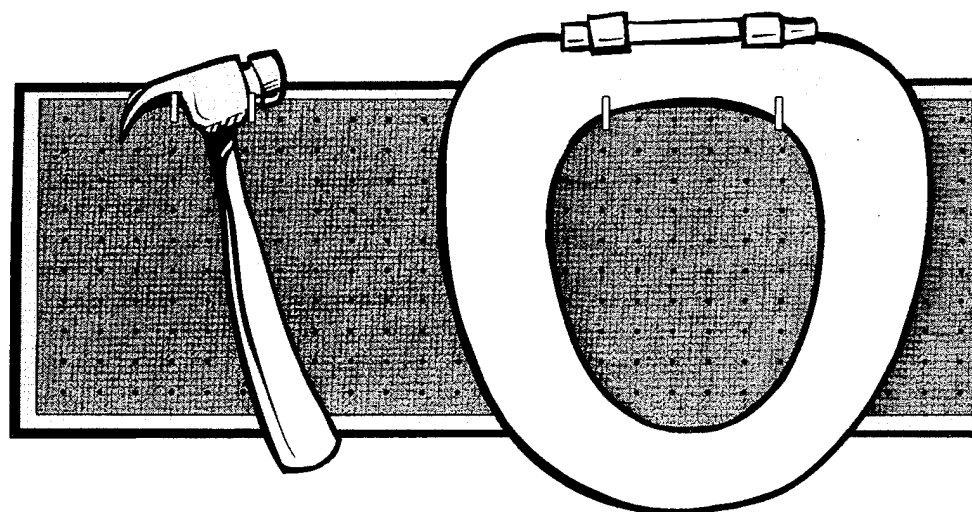
Perceptions Belie Facts — and the Public's Perception is DoD Wastes Money

Michael L. Tompkins

If you want a job done right, do it yourself. It's a familiar refrain from time immemorial. The originator could not have known, however, that he or she was describing one of the earliest forms of work control. Similarly, with the aid of an outstretched index finger and a stern voice, it's the same refrain that every parent uses to explain the idea of work control to every son or daughter: if you want a job done right, do it yourself to get the work done to your satisfaction. Simply put, if you want a job done to your standards — meaning the time required to perform the work, the cost, the level of quality and the required quantity — you should be in control, from start to finish.

Who Supplies the Element of Work Control?

That may well be a splendid idea, but what if someone other than you is doing the work? What if someone else is performing the task — a person or a company that possesses the necessary skills, knowledge, plant facilities and the equipment needed to do the



job and who charges for the products or services that they produce for you?

You only pay the bill and make use of the goods or services when their work is completed. In a situation like this, who supplies the important element of work control? Is it the person who pays to have the work done, or is it the person or company who actually provides the finished product or service to the consumer? Or, perhaps, both have an equal responsibility to control the work being produced and the price to be paid for that work when completed.

Work Control — A Definition

Work control is the timely awareness of a given job or task, and the

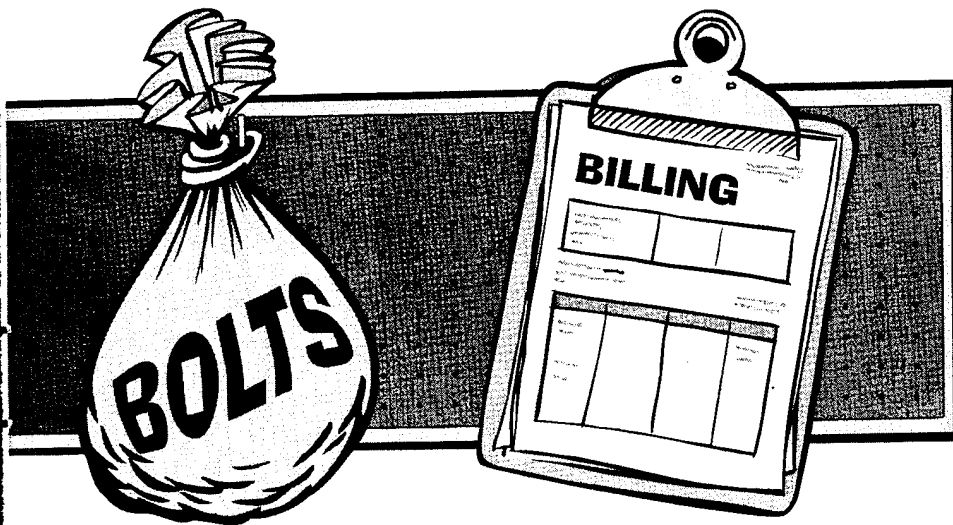
authority and means to initiate a change that will steer that work in a desired direction through to successful completion. Timely awareness and knowledge can be described as all the influencing cognitive factors that can impact work in progress. These factors are important because without them no control decisions can be made — they are the factors that influence a decision to respond and to exercise a manager's means to control a given program.

Making Informed Decisions

To manage means the manager assumes the responsibility of controlling a program — to plan it, organize it, direct it, control and coordinate it to its final and successful conclusion.

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**Whether it's
hammers,
toilet seats,
bolts, or
overbilling —
the headlines
say we're
wasting money.**



The program could be a simple personal one, such as hiring someone to make repairs to your home or car within an agreeable time period. Before agreeing to the work, you ensure that the quality of the finished product and the price you are expected to pay is fair and reasonable for that particular market. Or, it can be knowing enough about your own work to make "informed decisions" on work-related issues. The only unanswered questions regarding work control are —

- What degree of control is needed?
- At what point of a task or program should control over work be exercised by its manager to keep that program directed toward its goal?

Too Little vs. Too Much

If too little control is used, the work could run off schedule, fail at a critical time or cost far more than is fair and reasonable. If too much control is exercised, these same effects could occur. Somewhere between these two ambiguous extremes is the proper level of control to keep the work or program headed in the desired direction, on time and within budget limitations.

The Consequences of Losing Control

If control of a program involving many individuals and tasks is not shared equitably, or if too much con-

trol of the program is left in the hands of the one(s) producing the work, the result can be a loss of central control and a much higher cost for the program. This can sometimes result in "cost over-runs" or "overcharging." For government, these costs can reach upward to millions or even billions of dollars as noted by the following recently published examples:

From a Seattle, Washington-based News Service, dated May 1, 1994:

"BOEING PAYS \$75 MILLION FINE"

The Boeing Co. has paid \$75 million to settle an investigation that found the aerospace company

systematically overcharged and mischarged the U.S. Government... The mischarges occurred from 1980 to 1991..."

From Washington, Associated Press, April 13, 1994:

"NAVY SCAM OUTRAGEOUS, SENATORS SAY"

It took little more than a rented mailbox, a couple of blank forms, a rubber stamp and postage. That and some forgery produced a \$3 million bonanza for former Military Sealift Command insider, Edward McGill. He bilked the government for 5 years and was caught only when an accountant noticed bills were being paid for work supposedly done on a ship no longer in the fleet.

Senators complained:

"...there is no way to tell how many other scams are operating and how much money is [being] lost. I don't have a feeling that you really have a system yet that will catch things like [this]." Senate Governmental Affairs Committee Chairman John Glenn, D-Ohio, told Pentagon Comptroller John J. Hambre at a committee hearing.

Senator Byron Dorgan (D-N.D.) said the case was as outrageous as the \$500 hammer and overpriced toilet seats that awakened the Pentagon to procurement fraud..."somebody, someplace isn't thinking."

Hambre agreed with the diagnosis of the senators and the General Accounting Office: "Problems arise because the Pentagon pays bills as they come in, without checking invoices against any other files or computer records. Overpayments to contractors are so common that in the first 9 months of Fiscal Year 1993, contractors sent \$1.4

billion back to the government. In most cases they returned the money without being requested to do so."

From Washington, Associated Press, March 18, 1994:

"Energy Department contractors can't account for tens of millions of dollars worth of equipment..." Investigators for the General Accounting Office and the Inspector General told a Senate hearing that contractors running federal nuclear weapons plants have shown widespread disregard for excess equipment leading to millions of dollars in government losses.

Lost money can never be fully recovered. And, even if that remedy is attempted, the cost to recover the lost money can itself be expensive. But, control over an acquisition program can be gained. Lost control of a government program can be as devastating to government and government's agencies as losing control of one's own checkbook or owed credit card balance. The outcome is not only embarrassing, but also damages the credibility of all those companies and individuals involved in the loss.

Fixing Responsibility

The money government spends is not its own. All of it comes from America's taxpaying citizens. And, for that reason, government managers are even more responsible for their charge of managing the public's funds wisely and with frugality.

As an analysis, try substituting a fictional company's name for the word "government" as mentioned in the preceding examples:

Over-payments to Acme Manufacturing contractors are so common that in the first 9 months of fiscal year 1993, their contractors sent \$1.4 billion back. In most cases they returned the

money without being requested to do so.

Problems arise because Acme Manufacturing pays bills as they come in, without checking invoices against any other files or computer records.

Acme Manufacturing company contractors can't account for tens of millions of dollars worth of equipment. Company officials have been quoted as saying, "our contractors running our parts program have shown widespread disregard for excess equipment leading to millions of dollars in company losses."

"...somebody, someplace isn't thinking," one Acme Manufacturing company stockholder was quoted as saying.

Would you invest any of your money in Acme Manufacturing Company? How good is Acme Manufacturing's management team's control over the company's business? If adequate and effective controls were in place, none of these events would have occurred, at least, not in the "millions-of-dollars-lost" range needed to attract the nation's media attention.

Plan First; Then Set Controls In Place

Establishing program controls is one of the most important parts of all project planning. It's also the part of planning most often overlooked because many program planners invariably assume it's somewhere, built-in to their program:

"Somebody, somewhere is probably working out what forms should be filled out and "who-reports-to-whom" on this — if any of this is wrong we'll hear about it later"; or

"There is probably some regulation that covers this. But doing

it this way will be easier and faster, and we can keep our problems in-house."

What means of control is to be used and what those controls are supposed to achieve and when should be as important to managing a program as establishing the need or want that is being contracted for and acquired. Again, controls must be focused from an awareness of all the influencing factors, both internal and external to the program, that can impact a program and cause veering from its planned direction and goal.

The Means to Control

Management's means to control its program can take many forms. Files of records of necessary and constantly changing information; regulations; internal policies; reporting procedures; an individual's authority to act at a given time and under a given circumstance; an organization's personnel structure; or any number of means and methods — all these are means that result in a flow of current, accurate and useable information. This information can be used in making controlling decisions and determining a way to make those directed decisions meaningful and useful in steering the task or program. Accordingly, any control used must be consistent to be its most effective.

Breaking the Work into More Manageable Sub-elements

The Work Breakdown Structure (WBS) is an important tool in establishing the necessary working levels of control. It also constitutes a valuable way to visually map-out the controls needed to steer a program. By breaking the program down and making individual task assignments, the WBS keeps the program on time, on track and within budget.

Who is responsible? And, for what? Make sure that these individuals are fully aware of their responsibilities, their means of reporting, who they

report to, and at what times their information is needed.

First manager: "Why didn't you know about this problem, and how much it was costing our program?"

Second manager: "I didn't know about it because no one ever told me that it was a part of my job."

First manager: "Well, you should have figured that out for yourself..."

Put implemented controls in writing. Map the controls to be used in steering the program, and put those controls in written form. Assign the individuals responsible at key points. This will take thought; a shared knowledge of all aspects of the program; the imagination to foresee the impact of potential problems from the program's inception; and much free and open discussion from all those concerned and involved. Then, give copies of the assignments to those people named, or post the assignments so they are all aware of what they are expected to do, and when they are expected to do it. And, keep the assignments current.

Control is like steering the path of a rolling ball that can go in any direction at any time: it's a chosen path with individuals' names assigned at the path's most significant control barriers. When any of these barriers is struck or breached, a warning flag should go up to signal a loss of control to the path's central program manager. But, these controls must be planned well in advance of releasing the ball on its path.

Control is Also a Question of Ownership

Next, and perhaps the most important and difficult question of all concerning the subject of work or program control is: who has ownership of the need to control the work or program? "You can do the job right if you

"All qualified companies should have the opportunity to do business with the government and have the right to strive on an equal basis with all other potential suppliers."

are doing the job yourself." In government, contractor-supported programs give much of the right to control the program away to the contractor.

Most government contractor-supported programs are written using a fixed-price contract. What that means is that government pays a price equal to the firm price specified as a term of the contract.

"The contractor's ability to avoid a loss or make a profit under the fixed-price arrangement is directly related to its control of the costs of performance...The contractor assumes responsibility for [any higher] costs with the degree of responsibility determined by the particular type of fixed-price arrangement negotiated" for the desired acquisition.¹

"The contractor agrees to use its best efforts to complete contract requirements within the [stated] estimate."²

The contractor is given a greater percentage of program control of gov-

ernment acquisition contracts because the contract itself is written as a total package with everything wanted in the acquisition being "clearly stated." Thus, the supplier "knows exactly what is wanted" as part of the contract's terms and descriptive data — a condition that is supposed to be the result of extensive research and planning on the part of government — a condition that seldom happens.³

The result is government administering its contracts rather than actively managing them; subsequently, much of government's control is lost. The shock to government comes when the final bill for the contract comes due as noted by the preceding well-publicized examples.

The Control Offered by Free Market Competition

A free and competitive market is the basis for the system to work effectively. But, "the virtues...ascribed to competition are those that exist under conditions of perfect competition, when supply and demand are in a state of equilibrium."⁴ They hardly ever are, particularly in the markets for military goods and services" because "specially created military specifications restrict the opportunity for competition. Recent efforts to increase the use of commercial products and to discourage development and use of unique specifications and insistence on brand-name products are aimed at removing those restrictions. The law of supply and demand produces effective competition (and control) only when what is being bought and sold is offered by many sellers."⁵

How Can Lost Government Program Control Be Regained?

Control by government of its programs can be gained only by placing reporting and control methods and procedures in its contracts. For example, when a specified task is performed by the contractor, contact [name of government representative] before proceeding on to the next step or phase.

But this type of control can be time-consuming. In addition, it can be very expensive for government in contractor man-hours lost in waiting for answers. Further, it places the burden of production-line shutdown responsibility squarely on the government representative contacted for a decision before a contractor can proceed — a burden that would probably not be readily accepted by government or that individual.

It can impact other areas, too, such as scheduling and material control, personnel staffing and transportation. Another available option is to use the method of WBS to reduce one large all-encompassing contract for one supplier down to a few smaller, more manageable ones to a variety of smaller bidders. Each of these smaller contracts would then be controlled by a management team and central program coordinator well versed in the professional subjects being managed.

Examples of this method would be lower-tiered program contracts for several areas: engine maintenance; research and development (R&D engineering); engineering services; ground support; fuel; data services (computer and information services); machine shop and welding services; support equipment service and repair; etc. The advantages of this system would be an increased use (and best use) of free market competition, a lower cost for government, and regained program control with fewer surprises when the smaller contracts are completed.

Very large all-encompassing contracts to one contracted source reduce competition in the market and increase contract cost by limiting the number of competitors. Small task-oriented contracts to many competing bidders have the opposite effect of increasing the number of competitors and lowering overall program cost.

A review of past issues of *Defense Magazine's* annual *Almanac* issue

shows the same large "prime contractors" receiving the majority of all defense contract awards — contract awards amounting to billions of America's tax dollars. These contractors, in turn, sub-contract many of their coordinated efforts to a variety of smaller contracted sources for a profit/management fee. This is something government could do for itself; save a great deal of money; gain greater control over its programs; and create many new skills and jobs in government besides.

"If barriers to full and open competition are eliminated so far as possible, substantially improved competition and lower prices should result."⁶

The most "effective competition" results when there are "enough sellers so that no one seller dominates a particular market. All sellers are independent and active rivals, and new firms can enter the market easily."⁷

"All qualified companies should have the opportunity to do business with the government and have the right to strive on an equal basis with all other potential suppliers."⁸

In a market controlled only by the few companies who can afford the large capital investment needed to enter and participate in Government's large, "all that is needed is included in this one contract" method, few others can participate except at these large companies' discretion. Government loses control of its contractor-supported programs, and pays a much higher price than commercial business. Why? Because it sells away its program's control to the lowest bidder — sometimes at a very high and far-reaching price. For control to be its most effective, the discretionary ability to exercise it should be retained by the one paying the bill. By planning the tasks needed to implement and field a program, and then structuring

major contracted tasks so multiple contractors can participate on a level playing field, more control over the program will be retained by government, and program costs will be lowered.

The Exception — Of Course, There Had to be One!

Many new acquisitions are extremely proprietary or unique by specification, such as newly designed aircraft, weapon or computer systems. They may have no other commercial source other than their original manufacturer for maintenance, general facility support or repair parts needs. These acquisitions will have a limited opportunity for government to lower-tier their contractor support to competing bidders than those that are more common and more commercial.

Those that are less unique, and subsequently have larger numbers of commercial support providers, will have more available sources and more opportunities for government to make best use of alternative methods and free market competition. Ultimately, this will result in more government management control over its programs and lower costs. This, too, is a matter of research and an acquired knowledge of the freely competing market and commerce — research and knowledge out there just waiting to be used to government and business's mutual advantage.

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4. *Ibid*, Chap 2, para 3, p. 2-5.
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SECRETARY PRESTON UNDERScores DRAMATIC CHANGES IN DOD'S ACQUISITION ARENA

*"We Simply Cannot Continue to Conduct
Business the Way We Have in the Past"*

Collie J. Johnson

The Deputy Under Secretary of Defense (Acquisition Reform), Mrs. Colleen Preston, emphasized the dramatic changes taking place in the Department of Defense (DoD) acquisition arena in her keynote address to the students of PMC 95-1, Defense Systems Management College (DSMC), on 24 January 1995 at DSMC's Scott Hall. In her opening remarks, Secretary Preston told the students, "We live in changing times — something not said lightly because you are embarking on a course of study that will take you through some of the largest changes that we will see in the acquisition business in our lifetimes."

Reviewing past attempts at acquisition reform, she reminded her audience that "We [DoD] have in fact been doing acquisition reform continuously for years — since the first spare parts horror story in 1983. In the

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Honorable Colleen Preston, Deputy Under Secretary of Defense (Acquisition Reform).

meantime, something else has changed — the world has changed dramatically. And these new world changes mean that we have new national security challenges, a drastically reduced budget, and technology changing faster than the system can respond."

Security Challenges

Secretary Preston outlined several security challenges facing our nation,

stating that, "We now have a situation of mostly regional or limited conflicts." Other major concerns she highlighted were the proliferation of weapons of mass destruction — both nuclear and non-nuclear — and the possible failure of democratic reforms in the former Soviet Union. She also mentioned the risks to our U.S. economic stability, and the fact that "we are not leading the world in technology development as we have in the past."

Photo by Richard Maitox

"And if you stop to think about it, it's amazing when you look at the statistics; we call this the age of peace — the time after the Cold War. And yet, our Army has been performing missions at a rate up to 300 percent greater than we did prior to the fall of the Berlin Wall. Our Air Force has flown in Bosnia alone over 13,000 sorties and delivered over 70,000 tons of milk and medicine. It is history's longest running humanitarian airlift operation — twice as long as the Berlin airlift."

Defense Budget

"Our mission is changing," she continued. "We are doing everything from providing humanitarian assistance here in the U.S. to half-way around the world. All during a time of peace, when the country expects, and has reduced its spending on defense." Secretary Preston stressed that, "This is the 10th year of a declining defense budget." Our overall budget has been reduced 40 percent, but our procurement accounts have been reduced over 65 percent. And as we downsize, we take our most modern equipment and give it to a smaller number of troops. And that has a cascading effect — by the time we're done, essentially we've eliminated inventory and modernized at the same time."

"We're at the point now," she insisted, "where we have to spend the capital to start investing in modernization. Because we have now finished using up all of our good equipment — our modern equipment — and now we're going to have to start investing the money to recapitalize those equipment stores. So we must look forward not only to a stop in the budget decline, but an increase in the defense budget, just to keep us where we are today."

Technological Superiority vs. Numerical Superiority

Secretary Preston next discussed rapidly changing technology and its impact on the way we look at the acquisition process today. "Technol-

... "we must remember our national security strategy is founded on the precept that we will maintain technological superiority rather than numerical superiority."

ogy is changing so rapidly," she remarked, "that the system can't keep up. Look at information systems technology, which turns over on an average of every 18 months. Yet, to process a simple Request for Proposal, not using small purchase procedures, takes an average of 90 days; a negotiated procurement, an average of 210 days; and a complex services contract to support one of our program management offices, an average of 300 days. We can't even get on contract before technology is obsolete."

"But most important," she affirmed, "we must remember our national security strategy is founded on the precept that we will maintain *technological* superiority rather than *numerical* superiority. We've been able to do that in the past because we have been the leader in technology." Secretary Preston went on to say that "with our reductions in defense spending and other world changes, the majority of technological development is happening in the commercial sector — and it is available to the world."

Integration Key to Winning the Technology War

Speaking of our nation's role in winning the technology war, Secre-

tary Preston said that "the building blocks that make up our fundamental major weapons systems are primarily electronic in nature, and that electronic capability is too easily spread around the world. Our past strategy of being able to keep technology a secret, therefore giving us an advantage over our opponents, is no longer a viable strategy." She believes the key to winning the technology war now is integration. "The first to be able to integrate the technology already out there will maintain the superior force."

Change Critical to Acquisition Process

"Why are these world changes so critical to the acquisition process?" Secretary Preston posed this question to the students as she systematically outlined the reasons why. "First, the nature of the threat is so unpredictable now — the acquisition system must be even more flexible and agile than it was in the past. Because of the decline in the budget, affordability rather than performance of systems becomes paramount when making those critical tradeoffs between cost, schedule, performance and reliability. Because DoD cannot maintain the infrastructure that we have had in the past, we can no longer support a defense-unique industrial base. We are going to have to rely on commercial suppliers who can meet DoD's needs, if necessary. And we are no longer a large enough customer of most suppliers to be able to dictate to them the terms and conditions under which they contract with the federal government."

Secretary Preston then noted that "the DoD acquisition system has been based on a foundation of meeting some very important goals, which add complexity and time to the acquisition process: ensuring that the acquisition process is fair; preventing fraud, waste and abuse; standardizing treatment of contractors; ensuring that the government receives a fair and reasonable price when buying products that are not commercially available or competitively available; checks on the

government's demands upon its suppliers; and furthering socioeconomic objectives. The problem is that all of these demands, while valid goals of our acquisition process, add up to something so complex that it becomes a minefield in which to navigate in trying to accomplish the objective."

"In addition," she continued, "our internal DoD structure — our acquisition systems and acquisition organizations — is such that, it has evolved to respond to a different time and purpose. What we have is an industrial-era bureaucracy that was created and was responsive to the needs we had in the past — a very hierarchical structure. We minimized training requirements by making people experts in certain areas; we created stovepipes of these functional experts; and we are now learning that when competition is based on time, not efficiencies of scale, that we can no longer keep that type of management structure. We have to break down the walls. We have to integrate teams. We can no longer maintain functional stovepipes because the handoffs that occur between these functional experts inherently cause errors and use time. We can no longer afford that."

Why Change the Acquisition Process that Produces the Best Systems in the World?

Secretary Preston referred to the apparent irony in changing an acquisition system that has developed the best systems in the world. She affirmed that, indeed we have been the best in the world — no question about it. However, many in the acquisition arena would agree that it has been done, not because of the system, but because of the great people who work in the system. These dedicated workers, she believes, have figured out ways to get around the impediments that have been thrown up within the acquisition system. They fought hard to find those ways around the system in order to deliver products, for example, in Desert Shield and Desert Storm.

"If we had to identify any one problem ... it is to build into our system some way to reward and provide incentives for people to make judgments and to take risks — because our risk-averse system right now is killing us."

Secretary Preston stated that "the current system lacks flexibility and agility. No one person is accountable for the entire process, so it's difficult for anyone to make change." She went on to say that "the system poses barriers to the acquisition of commercial products and state-of-the-art technology because we apply government-unique laws and regulations that many commercial companies will not accept. For example, The Truth in Negotiations Act and the requirement for cost and pricing data — these are things that commercial companies have now rejected, given the fact that DoD is such a small part of their business base. They'd just as soon not sell to us. And many of them have stopped, or they have started selling through other companies so that these provisions do not apply to them. Therefore, we're paying for the overhead and pass-through costs of having these contractors sell to us through middlemen."

Risk-Averse System is Killing Us

"But probably the biggest problem we face," according to Secretary Preston, "is that the system right now has few, if any, incentives within its structure to take risks. And that is something that our senior management recognizes in OSD and in all the Services. If we had to identify any one problem that we must solve as we go through the process of acquisition reform, it is to build into our system some way to reward and provide incentives for people to make judgments and to take risks — because our risk-averse system right now is killing us."

"Right now we are spending too much time to make sure that our system is perfect," she emphasized. We cannot abandon our goals because they are valid goals of the procurement process. But what we must do is better balance what the costs of achieving those goals are with the achievements that we gain from pursuing those goals. And above all, we cannot lose sight of the fact that the acquisition system is not an end in itself — that it was created to serve a purpose: *to meet the warfighters' needs.*"

Changing the Process

Secretary Preston recapped DoD's vision for acquisition reform: "that the DoD will become the world's smartest buyer of best-value goods and services that meet the warfighters' needs, on time and within budget, while maintaining the public trust and supporting the nation's socioeconomic and industrial base goals." She then went on to outline how we propose to execute that vision.

1) *Establishment of the Office of the Under Secretary of Defense for Acquisition Reform.* The DoD established this office to be a focal point and a catalyst for the development of a coherent and practical step-by-step plan to reengineer the acquisition process, while focusing on implementation and institutionalization of acquisition re-

forms. "That is the charter that I have been handed by Secretary Perry," she stated, "to make sure that we implement the changes that we are pursuing now."

2) *Process Action Teams*. Secretary Preston told the students that Process Action Teams are an integral part of her office's strategy to implement acquisition reforms. These are teams of individuals from the field — "experts like yourself," she explained, "who know what it is to buy on a day-to-day basis, and know what it's going to take to make the system right."

"We have had tremendous support from the Process Action Teams. They've tackled some very difficult issues. People have come together. They have worked through the process of team building and spent 3 to 5 months together trying to work out recommendations and implementation plans. They have identified the road map to get us there — the implementation plan — and they are also tasked with identifying the incentives in the existing process that are inhibitors to making change."

3) *Senior Acquisition Reform Steering Group*. This group is made up of representatives of various affected offices, the Services, Defense agencies, OSD offices, Inspector General, Defense Contracting Audit Agency — all of whom are essential to the process of acquisition reform. Secretary Preston emphasized that this group represents the stakeholders, and that "acquisition reform will not happen unless we are all in this together. The critical element is implementation, and every one of us must work together to implement these reforms and achieve these goals."

Secretary Preston offered that it is not practical for the OSD senior leadership to observe the field's implementation of these initiatives on a day-to-day basis. However, representatives from her office participate in the major systems arena by sitting in

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on every Defense Acquisition Board (DAB) and every Defense Acquisition Executive's meeting. Part of their agenda is to keep the key issues up front: streamlining; performance specifications, not MILSPECs; and using contractor's data rather than requiring them to reformat their data for our use.

Acquisition Initiatives

Secretary Preston then moved on to discuss the three categories basic to achieving our acquisition goals: what we buy, how we buy it, and under what terms and conditions.

What We Buy

Under what we buy, she stated that we have already instituted recommendations of a Process Action Team on specifications and standards reform: Secretary Perry, on 29 June 1994, directed DoD to use performance specifications as the default beginning 26 December 1994. If a performance specification cannot

meet the user's needs, then a nongovernmental standard may be used. If a nongovernmental standard will not meet the user's needs, then a MILSPEC may be used — but only after receipt of a waiver from the Milestone Decision Authority (MDA). The only things that are excluded from the waiver process, even though the underlying philosophy applies, are spares and reparable.

How We Buy

Secretary Preston then directed her comments to another major focus — the adoption of commercial practices to acquire not only commercial items, but military-unique items. As an example, she cited recently approved regulatory waivers for the JPATS and JDAM programs, some DPSC procurements, Commercial Derivative Engines, Commercial Derivative Aircraft, and a few Army lead programs.

She then described the two types of programs her office is currently working: "pilot" programs, which are those programs that need not only regulatory waivers, but also statutory waivers to buy using commercial practices; and "lead" programs, which require only regulatory waivers and no statutory changes. She commented that DoD has been successful in getting the statutory waivers for these major systems, which are military-unique systems that are either derivatives of a commercial product or composed primarily of commercial components.

Terms and Conditions

In addition, she continued, "we succeeded in working with Congress to pass the Federal Acquisition and Streamlining Act of 1994 (FASStA). We're now going through the process of trying to see what changes can be made in the programs to streamline them further, allowing the contractor and the government to save money by using commercial suppliers to a greater extent."

Secretary Preston defined another goal as improving the Service and

OSD milestone decision making and information collection processes for major systems, or the DAB process — the oversight and review process that all program managers have to go through in order to get their programs approved at the OSD level or Service level. She referred back to the Process Action Team that was housed at DSMC for 3 months, and stated that they have completed their report and made a number of far-reaching and very provocative recommendations in terms of changing the existing way in which we review programs. That report is now being coordinated throughout DoD.

Her office finished assimilating the comments generated by that report and made recommendations, along with the Acquisition Reform Senior Steering Group, to Secretary Kaminski. They [her office, the Process Action Team, and representatives of various OSD offices] will then meet with Secretary Kaminski and the Service Acquisition Executives to resolve outstanding issues and concerns about some of those recommendations, and determine which ones can be implemented immediately. She expects an implementation memorandum resulting from the Acquisition Oversight and Review Process Action Team efforts by the end of February.

"We are trying to adopt internal best practices of world-class customers and suppliers, and one of the ways we identified as a mechanism to reach that goal is to pursue legislative change. In the FASTA, we received about 95 percent of what we needed to make all of the changes necessary so that DoD can become a world-class customer and supplier." Accordingly, the drafters of FASTA focused the statute on two primary objectives:

1) Increasing the small purchase threshold to \$100 thousand so DoD could use simplified procedures for 99 percent of our contract actions. These actions account for only 16 percent of our dollars, freeing up well trained

... "In the FASTA, we received about 95 percent of what we needed to make all of the changes necessary so that DoD can become a world-class customer and supplier."

contracting officers and senior buyers to work on that 1 percent of contracts that encompass 84 percent of our dollars. "The savings there are phenomenal," she noted.

2) The second objective in crafting FASTA was focused on removing government-unique laws and regulations from the acquisition of commercial products, including "pilot" programs, which are deemed commercial products for purposes of the statute. As a result of the report of the Procurement Process Action Teams, her office is looking at further legislative changes. Additionally, the Contract Administration Team's recommendations have just gone out for comment, and she expects responses soon. Secretary Preston then briefly characterized what the Process Action Team is trying to do in the area of Contract Administration as "...the need to move from inspection to process control. We need to be out of the business of inspecting products and contractors, period."

She noted that in a recently completed study—the first empirical study or verifiable study of its kind — an independent accounting firm looked

at what it costs to do business with the government by examining firms who do both commercial and government business. The study concluded from an activity-based cost accounting assessment, that the government was paying an 18-percent price differential compared to what the commercial sector was paying for essentially the same product. This disparity was attributed to—

1) *The MILQ 9858a Quality Assurance Standards*. The requirements imposed by this document are different from anything contractors use in their commercial divisions.

2) *The Truth in Negotiations Act*. This Act requires contractors to maintain accounting data based on cost for every product. Commercial companies do not track their costs on a product-by-product basis; therefore, all of the costs of creating that accounting system are added costs. "Knowing what it costs the contractor to build the product is helpful," reasoned Secretary Preston, "when we're negotiating in a sole-source environment, but it doesn't guarantee that we're getting a fair and reasonable price, because that contractor could be totally inefficient."

According to Secretary Preston, changes to the regulations and the Truth in Negotiation Act are out for public comment. The goal is to establish the critical element as the determination of *price reasonableness*. She also reiterated that contracting officers should go through a step-by-step process to determine price reasonableness without requesting cost and pricing data. Requesting such data, she continued, "should be the last alternative we pursue because that is the most costly option to the government, to industry, and is one of the biggest inhibitors to companies selling to the U.S. Government."

Integrated Product and Process Development Teams

Secretary Preston highlighted still

another ongoing initiative — the expanded use of integrated decision or integrated product and process development teams. “We’re looking at this, not only from the standpoint of a program management office or a program structure, but also in terms of the DAB process.” In the past, she remarked, OSD officials were the ones that the program manager confronted 6 months prior to the DAB in an attempt to bring them up-to-speed and answer all their questions. These same OSD officials, she continued, may have even delayed the process by holding the program managers hostage to make changes they [program managers] wanted. Now, OSD representatives are involved in the process up front and are a part of the team with the program manager.

“...I think it’s probably one of the most positive steps that has been taken. It doesn’t preclude that individual from giving the Under Secretary of Defense (Acquisition and Technology) an independent assessment of the program at some later point in time. What it does is ensure that the issues are at least raised as [they] go

through the process.” Secretary Preston then affirmed that she would go so far as to say that if she had her way, “no one in OSD can raise an issue if they have not brought it up to the program manager’s attention prior to the time when that program comes up for a DAB.”

As a part of that process, she referred to the importance of teamwork: “...anyone who is in the oversight and review process is in fact part of the team and as a result, bears responsibility for decisions made by the team...” Secretary Preston believes that the fallacy of holding the Program Manager exclusively accountable for the program will be a thing of the past because there are so many outside variables that impact on management of a program, including congressional and budget limitations — all of which the program manager has no ability to control.

Conclusion

In concluding her remarks, Secretary Preston stated that “We are in an environment of change. And the fact that we are going to have to accept

that change is now a given, rather than the exception. Many people have said that you cannot reorganize or reengineer an entity or enterprise unless it reaches the crisis stage. We in DoD are at that crisis stage. We simply cannot continue to conduct business the way we have in the past. We won’t have the people to do it; we don’t have the money to do it; and every dollar that we spend on that infrastructure is a dollar that we lose in terms of a person out there in the field with the proper equipment to do their job.”

Secretary Preston then offered her insight into and vision of the changing acquisition environment: “Think about the Chinese symbol for crisis. It is actually two brush strokes: one danger, and the other opportunity. You have at your hands, the chance to jump at this opportunity. Please, don’t give that up. Make the most of it, and think as you go through the next 20 weeks about how you yourself, every day as you walk into your office after you leave this course, can change the process for the better.”

MEETING AND GREETING THE SENIOR SENATOR FROM SOUTH CAROLINA



Photo by Richard Maltoux

Some of our instructors and students take “networking” quite literally. Lt. Col. Fred Yarborough, Professor of Acquisition Management, Defense Systems Management College, accompanied by fellow Citadel graduates, attended a reception on 2 February 1995 in honor of Capitol Hill’s South Carolina delegation. During the reception, Senator Strom Thurmond (R-S.C.) was awarded the [Citadel] President’s Leadership Award. From left: Maj. H.R. Zucker, USAF, PMC 95-1; Lt. Col. Fred Yarborough, USAF, DSMC; Senator Strom Thurmond (R-S.C.); Maj. Tim Crosby, USA, PMC 95-1.

COMMANDANT PRESIDES OVER DSMC'S FIRST VIDEO TELECONFERENCE

*Secretary Preston Fields Questions
From DSMC Regions*

Collie J. Johnson

An upbeat audience greeted Brig. Gen. Claude M. Bolton, Jr., Commandant, Defense Systems Management College, as he presided over a significant moment in the College's history: the first Defense Acquisition University/Defense Systems Management College video teleconference, conducted on 31 January 1995 at the Pentagon Telecommunications Center. Taking full advantage of the opportunity, the College aired the teleconference live over its cable television channel for the benefit of staff and faculty.

Linking up with DSMC Regional Offices in Huntsville, Ala.; St. Louis, Mo.; Boston, Mass.; and the classroom of the Intermediate Systems Acquisition Course, Fort Belvoir, Va., Gen. Bolton acted as introductory speaker and facilitator for a question-and-answer session between the video teleconference participants and Mrs.



Photo by Richard Maltex

Brig. Gen. Claude M. Bolton, Jr., Commandant, Defense Systems Management College and Mrs. Colleen Preston, Deputy Under Secretary of Defense (Acquisition Reform) participate in the first Defense Acquisition University/Defense Systems Management College video teleconference between the College and its Regions, 31 January 1995.

Colleen Preston, Deputy Under Secretary of Defense (Acquisition Reform).

Secretary Preston, who served as the distinguished speaker, appeared poised, articulate and enthusiastic about her subject — acquisition reform. Secretary Preston related that she was "happy to be the point of the spear, leading the charge" for acquisition reform throughout the Department of Defense. Speaking extempo-

ranously, without notes nor foreknowledge of the questions, she fielded a variety of inquiries from the Regions on several complex issues:

- Dissemination of information on acquisition reform initiatives.
- Concern over attrition of weapon systems experts and subsequent loss of expertise.
- Long distance learning.

Ms. Johnson is Managing Editor, Program Manager, DSMC Press. Program Manager gratefully acknowledges the assistance of Ms. Janet Daly, Confidential Assistant to the Deputy Under Secretary of Defense (Acquisition Reform) for her assistance in the preparation of this article.

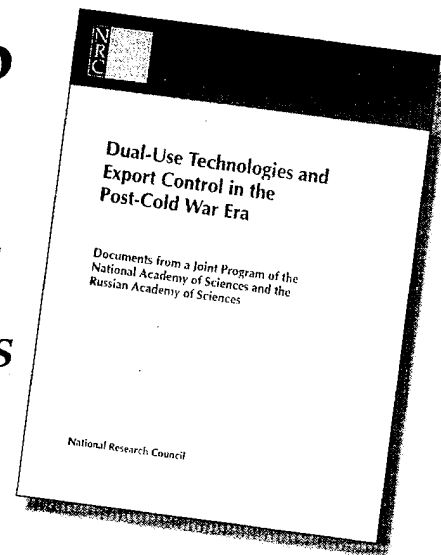
Continued on page 48

DUAL-USE TECHNOLOGIES AND EXPORT ADMINISTRATION IN THE POST-COLD WAR ERA:

DOCUMENTS FROM A JOINT PROGRAM OF THE NATIONAL ACADEMY OF SCIENCES AND THE RUSSIAN ACADEMY OF SCIENCES

National Academy Press

Edited by Michael R. Starkenburg



Convenient examination of the leading analysis and opinions about the state of technology transfer, foreign military sales and export licensing currently held by the Russian and American scientific community is now possible with the publication of the National Research Council's (NRC) compendium, *Dual-Use Technologies*. Leading businessmen, scientists and Department of Defense officials authored the writings by the U.S. representatives. On the Russian side, the authors are retired military men and academicians. While this is a report worthy of detailed review and protracted discussion, space demands that we mention only a few highlights.

The section titled, "Issues From The Perspective of the Russian Federation," summarizes the Russian Academy of Sciences (RAS) position. Some of the more important initiatives called for by the Russian scientists and military experts follow: (a) transformation and liberalization of the Coordinating Committee for Mul-

tilateral Export Controls (COCOM); (b) alterations to related international regimes, treaties and conventions that cover dual-use technology and export controls; (c) incorporating the Russian Federation in existing regimes; (d) undertaking confidence-building enterprises between the RAS and the National Academy of Sciences (NAS); (e) avoiding the "militarization of Russia"; (f) establishing effective "export administration structures"; and (g) controlling strategically dangerous armaments.

Of a more important and perhaps ominous note, the Russian delegation writes that increased Western sales of armaments to foreign countries due to the military downsizing and the concomitant decrease in government sales often "discriminates against Russia." The RAS goes on to write that, "When Russia leaves an international weapons market for either economic reasons or certain political agreements, her "warm shoes" are immediately filled by other countries (including the United States)...

such a state of affairs is completely unacceptable to Russia from both an economic and a political point of view." The RAS also stresses "mutuality" in the "post-confrontational world."

The Russian perspective on the contribution to peace that nuclear weapons have made and guarantees of compliance with enforcement mechanisms for any new agreements, are particularly arresting. Retired General Oleg K. Rogozin, a former deputy of procurement in the Soviet Ministry of Defense, casually observes that "there are very few specialists involved with problems of international security who doubt that strategic nuclear forces are the main culprit of an almost half-century lull in military conflict on the global level. This is an objective truth..."

An equally interesting comment that reveals the Russian position on a very worrisome element of the dual-use technology and export control debate — the prosecution of violators

Mr. J. Michael Brower is an analyst in the Luevano Outstanding Scholar Program with the Office of the Administrative Assistant to the Secretary of the Army and a student in Georgetown University's National Security Studies Program. Mr. Brower gratefully acknowledges the assistance of Hugh Howard and Debbie Reed, research librarians, Pentagon Army Library, in the preparation of this review.

of any agreed-upon protocol—comes from General I.P. Lebedev's thesis of a speech on this subject. "Concerning a system of sanctions for violations of the established export control regime," ensures Lebedev, "you do not have to worry about us. We know that the American legislation stipulates 10 years of imprisonment for violations, and the Russian legislation stipulates 15 years of imprisonment."

In another perspicacious selection, General R.F. Stepanov, a former USSR director of export control with an obvious gift for understatement, remarks, "The transformation of the Soviet Union into the Commonwealth of Independent States might accelerate the proliferation of weapons of mass destruction." This was precisely the case.

The American position calls for several actions: (a) restrictions to technology for "countries of proliferation concern"; (b) undertaking initiatives at home to "keep always a few steps ahead of Russia's technology"; (c) conducting joint research projects to build trust and a shared knowledge base with Russia; (d) increased "bilateral consultation"; (e) identifying "chokepoints" to control technology development and deployment, "particularly in terms of its military application"; and (f) countenancing the "brain drain" — the exodus of Russian scientists to countries offering more attractive working conditions, but perhaps with nefarious ends in mind.

Strengthening oversight organizations (e.g., Defense Technology Security Administration) is also suggested. Like the RAS statement, the American position contains a recognition of the *Realpolitik* at work behind the pleasantries and *bonne hominy* exchanged between the RAS and the NAS during the report's preparation: "Russia, however, has stated that it will rely on the conversion of its military enterprises to meet the demand of the consumer market, while simultaneously using arms sales as a mecha-

nism to finance this conversion. The country is therefore likely to maintain or even strengthen the close coupling between defense and commercial technology bases."

This is the kernel of the matter, the same kind of contradictory "chicken or egg loop" that Dr. Mitchel B. Wallerstein identifies in his contribution to this study titled, "Conceptual Approaches to the Problem of Dual-Use Technology." The "chicken or the egg" problem is that "it is not evident, at least not to policy makers in the West, which can or should come first: demonstrable evidence of the conversion of some significant fraction of the former Soviet Union's defense industry to the production of civilian goods, or expanded access to advanced technology and capital needed to spur that conversion." Wallerstein also goes on to briefly examine the phenomenon of "spin on" technology (applying commercially developed techniques to military systems, rather than the other way around) that is quite enlightening.

In a follow-on to the American position, U.S. businessman J.D. Rittenhouse of General Electric argues for replacing COCOM by "a treaty with retaliatory measures specified." He also makes poignant observations about the inevitability of high-level information technology exchange in the New World Order, remarkably similar to those made by Colonel James R. Golden, a West Point instructor, in the latter's new book, *Economic and National Strategy In The Information Age*. Rittenhouse goes on to expose the economic umbilical cord connecting private industry to the federal government.

The other essayists that contribute to this report cover more eclectic issues like the danger posed by high-precision weapons, optoelectronic device restriction, and the disposition of high-performance structural materials. The report ranks of first importance for those working in the area of interna-

tional security policy in general, and those attempting to restrain the flow of defense-related wherewithal to potential adversaries in particular.

Ed. Note: The report by the Office of International Affairs National Research Council covers the findings of a 1-year joint program between the NAS and the RAS that dealt with problems of export controls on dual-use technology.

Inside DSMC



Mr. Robert W. Ball, Editor, *Acquisition Review Quarterly*, retires effective 31 March 1995. Bob has been a member of the publications staff at DSMC since July 1976, and served as Director of Publications from 1984 to 1993. He retires with a total of 34 years and 3 months of federal civilian service. A native of Newport, Tennessee, Bob plans to divide his time between the family farm in Newport, Tennessee, and their primary residence on Wilmington Island, Savannah, Georgia.

COMMERCIAL USE OF SATELLITE IMAGERY

Friend or Foe — The Choice is Ours

Maj. Tim Hawes, USAF

With the advent of commercial licensing of U.S. commercial satellite builders, the possibility exists for the Department of Defense (DoD) — or its adversaries — to purchase military operations planning data in the form of 1- to 3-meter imagery. When U.S. commercial satellite makers launch their first vehicles into low earth orbit in the 1997-1998 time frame, the DoD will be faced with a delicate choice of whether or not to buy imagery to supplement their operations planning and execution needs. While this is not a new choice given the existing LANDSAT and SPOT satellites, the enhanced commercial capabilities promise to offer an even more tempting product. This development forces new questions on the military Services at a time when they are being pushed to satisfy more of their needs with commercially available products.

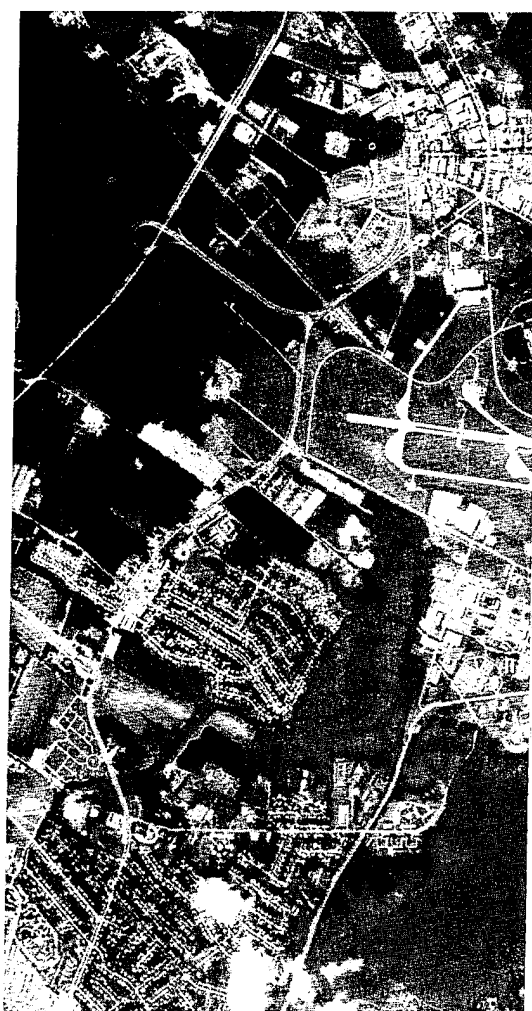
Opportunities and Challenges

Since the advent of reconnaissance airplanes in World War I, we in the U.S. military relied on remote sensing data in the form of imagery to support our operations. Photo reconnaissance

proved just as important in World War II for U.S. operations. During the Cold War, highly secret national technical capabilities evolved to provide imagery data to those in the national security community. Today, we've seen the technology shift dramatically to a point where civilian and commercial satellite operators sell imagery data with operational support quality to worldwide civilian customers, even potential U.S. adversaries. This growing availability of increasingly higher quality imagery brings opportunities and challenges for the U.S. military's operational forces as they attempt to meet the expanding mission assignments given them in today's turbulent environment.

Initial Commercial Imagery is Still Available

Government sponsorship was the catalyst for development of medium- to low-resolution imagery (10-meter on up), currently available for global purchase. Starting in 1984, the U.S. Government put the imagery of LANDSAT 4 and 5 in the hands of a private company for operations and marketing. These two satellites have six bands of imagery, with 30-meter resolution and a thermal band of 120-meter resolution.¹ The satellites were digitally recording the world in 185km x 185km image data sets since the launch of LANDSAT 4 in 1982, followed by LANDSAT 5 in 1984. While LANDSAT 6 failed to reach final orbit,



Satellite image of Langley Air Force Base, Va., taken on 11 June 1988, at 3.5m resolution by a Russian KVR-1000 Resurs satellite.

Maj. Hawes is a Space Budget/Congressional Staff Officer, Assistant Secretary of the Air Force for Acquisition, Pentagon, Washington, D.C., and a former member of the Defense LANDSAT Program Office. He is a graduate of PMC 94-2, DSMC.

NASA is currently developing LANDSAT 7, anticipated to launch in 1998. The Clinton administration continues to foster earth remote sensing for worldwide public use.

While the U.S. instituted LANDSAT, the French Government sponsored their own remote sensing capability — the SPOT satellite. The latest in this series, according to *Aviation Week & Space Technology* (4 October 1993), "SPOT 3 began Sept. 27 [1993] to return excellent panchromatic images with 10-meter (33-ft.) resolution and three bands of multispectral data at 20-meter (66-ft.) resolution." These imagery data are also available for purchase by the world community and bring the capability of stereo imagery formats for

lite — which has an announced resolution of 1 meter." We as military operators ought to be interested in who is taking advantage of this capability and how this might impact our planning and operations.

Other Countries Offer Imaging Capabilities

Following the lead of the other space-faring nations, Russia presented imagery for sale to the world community starting in the late 1980s. Today, Russia maintains Resurs — an earth resources satellite — with imagery available for purchase. Also, Russian panchromatic images with resolutions down to 2 - 3 meters are available in the U.S., sold through EOSAT — a joint venture of General Motors and General Electric (based just outside Washington, D.C. in Lanham, Maryland). These film-based images are estimated to come from the "Russian Kometa fourth-generation reconnaissance spacecraft," as detailed in a 23 May 1994 *Aviation Week & Space Technology* article.

Other countries besides the U.S., France and Russia have flown imaging satellites and offered the data for sale. These include Japan (MOS-1 and 1B, JERS); European Space Agency (ERS-1); and India (IRS-1A and 1B). South Africa displayed a model of a 1.5-meter resolution — "Green Sat" — and announced its intentions to launch in 1995. Japan has similarly announced a new satellite — "Hiros" — to have a 2.5-meter panchromatic resolution complemented by 10-meter multispectral bands.² In addition, Germany, China and Israel are all believed to have or be developing reconnaissance satellite capabilities.³ The availability of imagery from other country satellite operations will continue to grow as the technology improves and becomes more easily available.

Potential Commercial Satellite Operations from the U.S.

Several U.S. companies have remote sensing efforts under way for the

U.S. commercial space marketplace. These systems would all have imaging capabilities in the 1- to 3-meter resolution range. They are vying for the mixture of commercial, civil government and national security market share that has purchased LANDSAT and SPOT images to this point. They will also be trying to branch into the much bigger aerial photography market.

For instance, WorldView Imaging and CTA Inc., plan to launch two satellites with 3-meter resolution in the 1995 time frame to compete in this market.⁴ Eyeglass International, a jointly owned company formed by GDE Systems Inc., Litton Itek Optical and Orbital Sciences Corporation recently won a license from the Commerce Department to proceed with a 1-meter resolution satellite system to be launched by 1997.⁵ As reported in *Aviation Week & Space Technology* (23 May 1994), Lockheed's board of directors recently approved investment in a 1-meter resolution satellite system that could also be operational by the end of 1997, and could involve other U.S. and foreign partners.

In addition, Litton Itek Optical entered into separate discussions to build a reconnaissance satellite system for the United Arab Emirates, with an expected resolution as good as 0.8m, according to *Aviation Week & Space Technology* (21 June 1993). Meanwhile, NASA selected two firms — CTA Inc., and TRW — to build light satellites for earth remote sensing. While CTA's solution will be in the medium (3-meter) resolution class (and identical to the two planned to be flown commercially), TRW's will combine a 30-meter resolution multispectral imaging (MSI) capability with 5-meter panchromatic capability.⁶

These cases illustrate the search by U.S. aerospace firms to broaden into the growing commercial remote sensing marketplace and the resulting pressure on the U.S. Government to "ease export restriction on higher-

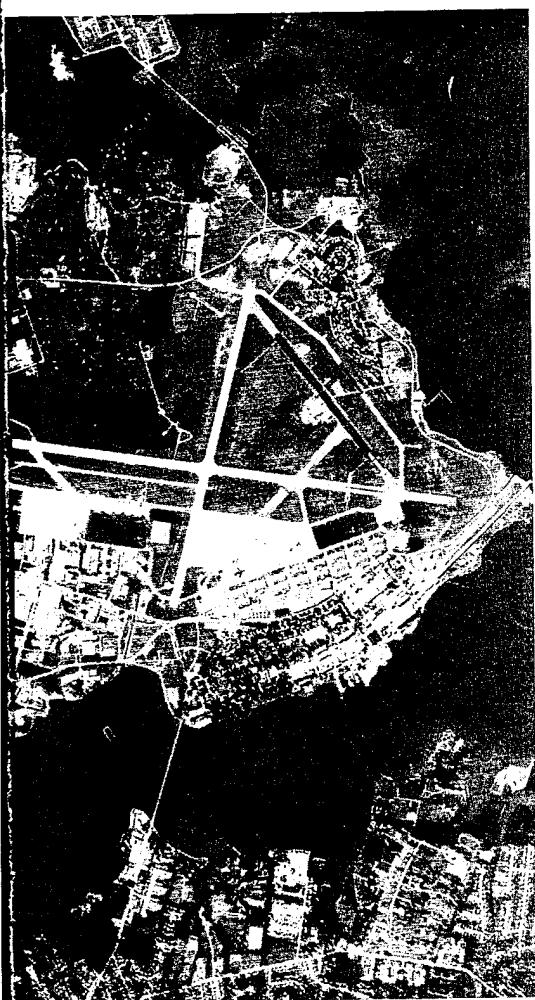


Photo courtesy of Autometric Inc.

added usefulness. France has been working on an improved capability to follow SPOT 4, for use in military reconnaissance. In fact, according to the 21 June 1993 issue of *Aviation Week & Space Technology*, "...France has been actively seeking users for its Helios military reconnaissance satel-

resolution imaging satellites and data in order to compete with foreign systems offering resolutions of 1 meter or better."⁷ This competition will only increase the on-orbit capabilities available through the commercial marketplace. We in the military need to be aware of the evolution in space-borne imaging capabilities over the next 5 years. We will have the option of acquiring the data for our own uses, but we cannot ignore this evolution any longer — or we will pay the price in future missions.

How Will the New Availability of Data Look?

With the successful launch of one, some or all of the potential U.S. commercial capabilities, combined with the expanding foreign space remote sensing capabilities, there will be a burgeoning selection of satellite imagery data in the near- to mid-future. The data will fall into the range of 1- to 5-meter data (typically in a panchromatic, or black and white band), with much of it complemented by coarser resolution MSI. These multispectral data add entirely new dimensions to the image data utility — dimensions beyond the scope of this article. Not only will resolutions improve, but with new sensor technologies the width of the image itself should also increase, allowing single-image swaths of a larger surface on the ground for a given resolution.

Augmenting the increased resolutions, band sets and image surface areas will be the ability to use Global Positioning System (GPS) data to accurately relate the space images to actual ground locations. This ability to precisely locate ground objects in scene data sets is a major improvement not only for cartographers and urban planners, but for anyone interested in using the satellite imagery for calculating potential target coordinates.

Another related factor is the timeliness involved with actually acquiring an image of interest and making it available to the end user. With the

With GPS information, these data could potentially be used for calculating target coordinates of U.S. installations by an enemy force. We will be facing a capable threat that did not exist 5 years ago.

increase in space platforms and ground processing capabilities, the time lines for providing a requested image should shorten dramatically. This will enhance the value of the imagery to support any operational need.

With the increasing number of sensors and their enhanced area coverage, a correspondingly larger portion of the globe will be acquired and hence be available as imagery stored in archives for manipulation and exploitation by the commercial public, foreign countries and, of course, the U.S. Government and Armed Forces.

Challenge and Opportunity for U.S. Forces

The challenge for those of us in the U.S. Armed Forces will be to operate in environments where potential adversaries, such as Third World nations or even terrorist groups, will

have access to this open flow of reconnaissance quality data in the form of commercial satellite imagery. U.S. commanders must assume that our opponents have access to this kind of information and could be forewarned of U.S. intentions, and even our specific operational plans unless we maintain operational security precautions. With GPS information, these data could potentially be used for calculating target coordinates of U.S. installations by an enemy force. We will be facing a capable threat that did not exist 5 years ago.

An opportunity arises for us as well, since we are in an excellent position to take advantage of the growing information flow. In many instances, we are already capable of accepting digital satellite imagery. Today for instance, according to the Defense Mapping Agency (DMA) in their publication, *Digitizing the Future* (3d Edition), "DoD uses multispectral imagery (MSI) for geographic information applications, bathymetry, special map products, trafficability analysis, aircrew perspective views and contingency planning. The use of MSI is developing throughout DoD agencies, Services, and the Unified and Specified Commands...Aircrews using natural color perspective views created by 'draping' the imagery over Digital Terrain Elevation Data (DTED) said it was 'like being there.'"

Various agencies of the DoD purchased LANDSAT and SPOT for a number of years to supplement information that they normally obtain through other means. As pointed out in *Digitizing the Future* (3d Edition), "The Defense Mapping Agency is the primary action office for the procurement of MSI [multispectral imagery] remote sensing data by the Department of Defense agencies and Military Departments." In fact, the Defense Mapping School offers a 10-day course to DoD personnel for "familiarization training in the analysis, interpretation and application of digital MSI." Accordingly, some of us in the

military are already aware of how this unclassified imagery is useful to augment our normal mission data.

DoD Stated Needs

The use of unclassified, commercially available data for the U.S. military was acknowledged again in a February 1994 memorandum: "The Joint Requirements Oversight Council (JROC) has reviewed the Remote Earth Sensing (RES) Mission Need Statement...we believe other alternatives, such as an RES sensor on a DoD satellite (i.e., Defense Meteorological Satellite Program), commercial satellite, foreign satellite...may be cost effective and affordable."⁸ In this memorandum, the senior leadership validated our continued use of RES data and recognized the likelihood that future image data may come from a source beyond our control. More recently, as reported in *Aviation Week & Space Technology* (23 May 1994), the U.S. Air Force and DMA reportedly purchased Russian "Earth Resources" imaging data sets for evaluation of the unclassified data's applicability to DoD needs.

Potential Uses of Future Purchased Imagery

With access to commercial imagery data comes some advantages for our operational forces. In planning for humanitarian and joint operations the commercial imagery is very useful as a common reference graphic, since it's already unclassified and can be distributed quickly to our allied partners or participating local officials. Some U.S. forces have already used LANDSAT and SPOT data to make image maps with this in mind. The multispectral aspect of this future imagery, while not discussed here, also addresses new areas of DoD responsibility, such as environmental impact analysis for use during base cleanup operations. Also, we must address our vulnerability to potential compromise through an adversary's access to the same commercially available data.

An example showing civilian use of commercial satellite imagery combined with seismic data occurred when the Verification and Technology Information Center (VERTIC) (based at Imperial College, London) announced the location of a 5 October 1993 underground nuclear explosion. VERTIC publicized its findings, including the test site location in China, a mere 3 hours after the event took place. The scientists used LANDSAT 30-meter data and SPOT 10-meter data (although they attempted to get Russian higher-resolution data as well) to monitor and evaluate possible test sites. The previously acquired imagery along with the seismic information allowed the VERTIC scientists to quickly eliminate potential sites and select the suspected test site once the seismic data indicated an event had occurred.⁹ This example illustrates the capabilities offered to us to augment the existing DoD structures as well as the possibilities of some other group tracking our activities in the future, especially when improved satellites reach orbit.

Conclusion

The availability of commercially supplied satellite imagery in 1- to 3-meter resolutions presents both an opportunity and a challenge to the DoD operational forces. Through seeking to understand this opportunity, we will discover the challenge to our forces. This growing number of satellite systems supplying imagery with varying qualities to multiple users must be taken into consideration by our military leaders as they plan operations for U.S. forces. Our commanders must assume that their adversaries have access to this level of satellite imaging capability, and conduct their operations accordingly.

The former Director, DMA, Maj. Gen. William K. James, USAF (Ret.), set the tone for his own agency and perhaps for the rest of the DoD: "It is the policy of the Defense Mapping Agency to review and analyze mapping, charting and geodesy products

and data...derived from commercial imaging satellites for their usefulness in satisfying DMA customer requirements."¹⁰ In an era of diminishing defense budgets, we in the DoD should continue and potentially increase our use of commercial imagery to take full advantage of the civil/commercial dollars already spent and to more fully understand the potential threat to U.S. security.

Endnotes

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3. Lenorovitz, Jeffrey M., "Industry Press CIA to Ease Curbs on Imaging Satellites," *Aviation Week & Space Technology* (21 June 1993), pp. 80-81.
4. Nordwall, Bruce D., "Digital Imaging Boom Exploits Technologies," *Aviation Week & Space Technology* (6 June 1994), pp. 40-42.
5. Asker, James R., "High-Resolution Imagery Seen as Threat, Opportunity," *Aviation Week & Space Technology* (23 May 1994), pp. 51-53.
6. Asker, James R., "SmallSat Pacts Key to NASA Reform," *Aviation Week & Space Technology* (13 June 1994), pp. 56-57.
7. Lenorovitz, Jeffrey M., "Industry Presses CIA to Ease Curbs on Imaging Satellites," *Aviation Week & Space Technology* (21 June 1993), pp. 80-81.
8. "Remote Earth Sensing," Joint Requirements Oversight Council Memorandum 014-94 (17 February 1994).
9. Gupta, Vipin and McNab, Philip, "Sleuthing at Home," *Bulletin of the Atomic Scientists* (December 1993), pp. 44-47.
10. "Multispectral Imagery (MSI) Applications," *Digitizing the Future*, 3d Edition (Defense Mapping Agency), p. 85.

Continued from page 41

- Changing the acquisition culture.
- Defense Acquisition Workforce Improvement Act (DAWIA).
- Responding to warfighters' needs.
- Electronic commerce; maximizing resources.
- Education and training.
- Institutionalizing processes to capture expertise.
- Building a bigger team to go out to the major weapon systems developers and "spread the word."
- Acquisition community response to the Acquisition Reform Process

Action Team's final report, "Reengineering the Acquisition Oversight and Review Process."

- Future role of Defense depots.
- Regulatory implementation of the Federal Acquisition Streamlining Act of 1994 (FASa).

Secretary Preston spoke with detailed knowledge and enthusiasm — an enthusiasm shared by her audience as she drew the participants into DoD's vision for acquisition reform. In conclusion, Secretary Preston acknowledged that her office is merely a catalyst and facilitator:

"...the real effort in acquisition reform is happening out there in the field. All of us must learn to think in a different way to respond to our primary mission — meeting the warfighters' needs. We must do so despite budget cuts and a planned reduction in the workforce..."

Ed. Note: Due to technical difficulties, the DSMC Western Region Office in Los Angeles was unable to participate in the teleconference as originally planned.

DSMC'S DR. FRANZ FRISCH TO PUBLISH WWII MEMOIR

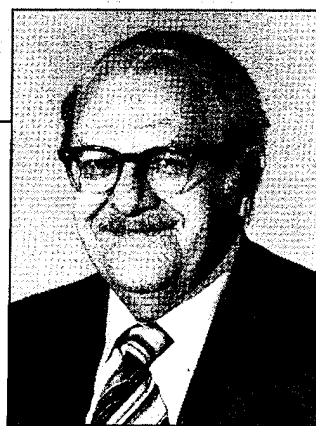
An article excerpted from the World War II (WWII) memoir of DSMC professor Franz A. P. Frisch, a private in the German Army for 9 years, will be published in the September 1995 issue of *World War II* magazine.

DSMC professor Wilbur D. Jones, Jr., collaborated with Frisch and researched and wrote the memoir based on hours of conversations, taped interviews and research into Frisch's campaigns. The article is highlighted by numerous photographs Frisch took on campaign showing the destruction of war, German Army camp life, comrades and the soldiers' leisure time.

Frisch was an artillery *soldat*, or German simple (common) soldier, whose battalion participated in numerous Panzer assaults in the European war. Drafted from his home in Vienna, Austria, in 1938, Frisch saw action in the German invasions of Poland in 1939, which began WWII, France in 1940, and the Soviet Union in 1941. In Russia, his unit reached the outskirts of Moscow before the Soviet counterattack and the extreme bitter winter cold forced the Germans backward.

In 1943, his artillery unit was assigned to defend Sicily against the invading Americans. Retreating to Italy, his battalion fought the American advance, including at the bloody Battle of Casino, northward up "the boot," where the Americans captured him near the Austrian border in March 1945, 2 months before Germany surrendered. He spent the next 2 years in a prisoner of war camp in Italy before returning home.

Following the war, Frisch completed his education at the Technical University of Vienna, attaining a doctorate in engineering management. After a successful career in shipbuilding and shipyard management in Germany, he and his family immigrated to the United States in 1958. He has been on the DSMC faculty for more than 10 years, and is a member of the Research, Consulting and Information Division (RCID). Jones, a former RCID associate dean, is in the Acquisition Policy Department, Faculty Division.



A FOCUSED APPROACH TO AFFORDABLE WEAPON SYSTEMS

Defense Manufacturing Council Working to Keep U.S. Defense Capability No. 1

To oversee the implementation of an integrated Department of Defense (DoD) strategy for achieving affordable weapon systems that meet all essential performance requirements, the DoD chartered the Defense Manufacturing Council (DMC) earlier this year. Chaired by the Principal Deputy Under Secretary of Defense (Acquisition and Technology), Honorable R. Noel Longuemare, the Council has broad representation from throughout the Department and Uniformed Services. The Council's role is best summarized in the words of Secretary Longuemare:

"...we are reengineering the way we do business with business, with a particular focus on defense manufacturing at the Pentagon. We are using the word 'manufacturing' in a different way. This is manufacturing with a capital 'M'. It means all the processes, technical and business, used by a firm or group of firms to develop and produce a product, not just factory floor assembly. Its essence is integrating design and manufacturing."

Program Manager wishes to thank Capt. Guy Higgins, USN, Senior Military Assistant to the Principal Deputy Under Secretary of Defense (Acquisition and Technology) for his cooperation in the preparation of this article.

The Council focuses on several areas key to integrated strategy: business, design and manufacturing process issues that cut across DoD initiatives in technology, acquisition reform, defense systems acquisition, environmental security, logistics and industrial base policy. Their goal from an acquisition reform perspective is to "keep U.S. defense capability No. 1 despite a downsized budgetary environment."

To achieve their goal, the Council is committed to acquisition reform in the broadest sense. According to Secretary Longuemare, "Probably the single most important requirement is to institutionalize the spirit of change throughout the permanent workforce, especially at the action level. Our game plan will push these changes down to the lowest levels of the organization as rapidly as possible. This is one of the primary reasons for forming the Defense Manufacturing Council (to accelerate this process)." To accomplish that end, according to Council members, will require changing methods and procedures and developing ownership in the permanent DoD workforce and industry.

On 13 December 1994, the Council held an offsite that was also attended by the Under Secretary of Defense (Acquisition and Technology), Dr. Paul Kaminski, as well as

senior leaders from the Office of the Secretary of Defense and each of the Services. Beginning the offsite, the Council traced the current serial DoD processes — slow and costly processes, averaging 10-15 years from requirements, concept, through to final production and deployment. To effect changes in methods and procedures and ultimately, long-term cultural change, the Council focused on four key areas:

- Manufacturing Process Maturation
- "Pilots" as Agents of Change
- Cost as an Independent Variable
- "Incentivizing" Cost Reductions

Manufacturing Process Maturation

The Council found an imbalance in investment between product development and affordable manufacturing processes. This imbalance exists from Science and Technology through production. Advanced technology demonstration programs are not adequately addressing manufacturing affordability. As a consequence, initial production of defense systems is characterized by high scrap and rework, which results in more costly systems and schedule slips.

The DMC also concluded that the DoD should manage defense through use of Integrated Program (or

Product) Teams or IPTs. These multidisciplinary teams, empowered to perform the program/product work, were shown to be highly effective in the private sector and selected defense programs. The use of IPTs is occurring in many areas, but not yet across functional Pentagon organizations. Going to IPT management will require a significant cultural change, and Department-wide use of IPTs will have a profound implication for functional organizations. Finally, effective IPTs require well-trained people and clearly defined processes.

Once processes are defined, they must be measured if process management is to be effective because we cannot improve what we don't measure. Benchmarking is a measurement aid and essential process improvement tool.

Another aspect that must be managed to achieve system affordability is total life-cycle cost. The DoD needs to increase the up-front emphasis on supportability as a way to achieve affordability. Another way is to ensure that immature product and process technology is not on the critical path for Engineering and Manufacturing Development. Putting technology on the critical path is high-risk.

To achieve manufacturing process maturation, the Council developed four goals:

- Affordability will be achieved through management of total system life-cycle cost.
- Process management will be adopted by all DoD development, acquisition and support organizations.
- Integrated Product Teams will manage and lead development, acquisition and support of systems.
- Manufacturing processes, through Integrated Product and Process Development, will be mature and scalable before committing to production.



Honorable Paul G. Kaminski, Under Secretary of Defense (Acquisition and Technology).

"Pilots" as Agents of Change

The Council decided that changes to acquisition procedures should be "piloted" through as many programs as possible. Thus, "pilots," as defined by the Council, are programs that have or need statutory and regulatory relief. "Leads" are "pilot-like" programs that do not require statutory relief. The Council examined how "Pilots" and "Leads" could be used as agents of process change to systematically foster, promote and evaluate new ideas for reducing cost while achieving acceptable performance. Their conclusion was that "Pilots" should be reserved for special or unique challenges, but most, if not all programs, could be "Leads" for selected aspects of acquisition streamlining.

The DMC concluded that "pilot/lead" changes could best be made by program teams and Service Acquisition Executives (SAE), in both a bottom-up and top-down approach. The bottom-up approach would ensure a wider range of proposed changes and take maximum advantage of the creative resources of the acquisition community. The top-down approach, likewise, will ensure that major changes focused on moving the acquisition process in the intended direction will be included in

this effort. Envisioning the process, the Council outlined it as follows:

- A proposed change in acquisition processes is developed by a program team, including the expected improvements in cost, quality or cycle time with associated metrics.
- Once coordinated with the senior in the chain of command, the proposal would be forwarded to the program Milestone Decision Authority (MDA) for approval.
- Upon approval, the change would be reported to the SAE (and ultimately to the DUSD(AR) for inclusion in the lessons learned data base) to ensure that future reports are received and appropriately processed for distribution to the acquisition community at large.
- Programs piloting changes to the acquisition process would normally report their metrics on a regular basis (determined as a function of the change itself and approved by the MDA). These regular reports would then be forwarded to the SAE (and ultimately to the DUSD(AR) for inclusion in the lessons learned data base).

Additionally, the Council concluded that as many programs as possible should move out with "better practices." Mechanisms should be put in place for "good ideas" to flow to and from program managers and program executive officers. Likewise, the Council recommended that program executive officers and program managers be allowed to tailor "good ideas" (in other words, "go light on policy," with top-down encouragement). To implement "pilots" as agents of change, the Council developed the following recommendations:

- For some programs, try "big" changes.
- Seek opportunities for pilot programs in all phases of the program life cycle (i.e., modifications and upgrades are becoming ever more important).
- Establish a mechanism for identify-

ing candidate "big" changes for "pilot" implementation.

- Implement changes for ALL programs.
- Get the word out.
- "Incentivize" government and industry program management officials.
- Establish mechanisms for disseminating information that helps.
- At all program reviews, assess "streamlining" just like cost, performance and schedule.

Cost as an Independent Variable

Next on its agenda, the Council discussed cost as an independent variable. Weapon system cost is traditionally a result rather than a driver of requirements. There is a widely held perception that the last 5 percent of performance drives a significant percent of unit cost and is not critical to mission success.

In a constrained budget period, the objective is to change the DoD values, policies and procedures to make cost a major and balanced consideration in establishing requirements for new weapons and needs, and in managing the design of new systems. The DMC seeks to move the tradeoff considerations from a preoccupation with performance and technological superiority to a balanced consideration with cost.

Examining their findings, the Council found that commercial firms make cost and "time to market" major drivers of their new product developments. Their successes are strongly influenced by a stable management decision process and stable tradeoff values. Department of Defense tradeoff values were classically weighted toward performance and with notable success in performance lead over competitors. However, measured against new values of reducing cost, the need for change is significant. To make the needed shifts, DoD must change its decision making process; the performance orientation of the acquisition community, and must get buy-in by

those who could derail change. There must be a critical mass of key people involved — maybe 10,000 to 20,000 acquisition personnel.

Because DoD has little experience in making cost an equal parameter to performance and letting cost drive design, the Council identified a need for new models and tools, as well as training in their use. However, they believe that industry can rapidly evolve the needed models and tools, once the DoD commitment to change is accepted and understood.

The DMC believes that three main issues need to be addressed: shifting values and getting buy-in; changing policies and procedures; and providing a link to the budget. To address the issues, the Council developed a strategy involving an integrated DoD team to set cost and performance goals, and in parallel to rapidly get practical experience in setting goals, developing models and managing tradeoffs on selected lead programs.

While this is going on, a series of meetings and policy statements would seek to get the word out to the DoD community and, in particular, to the implementing levels of DoD. The Council recognizes that a change in values to achieve widespread implementation will require concerted top-level effort for a period of years. To implement their strategy, they developed the following action plan:

- Develop a DoD integrated team approach (process) to establish mission needs, tradeoffs and cost goals.
- Establish a joint SAE IPT under the auspices of the DMC.
- Start the process of changing "values."
- Make unit cost objectives and cost/performance tradeoffs a major topic of each Defense Acquisition Board meeting.
- Establish budget and resource planning and analysis procedures compatible with cost/performance tradeoffs as a main acquisition management approach.

"Incentivizing" Cost Reductions

The last item on the Council's agenda was "incentivizing" cost reductions — a theme that provided two major target areas: 1) contractual incentives and the means to promote increased usage of contractual tools to reduce cost; and 2) management incentives and the means to motivate and reward program managers and the acquisition workforce for pursuing cost reduction by managing risk, rather than just avoiding it. After an overview of contract types and their application, the Council deliberated on how to increase the use of incentives.

Their consensus was that there are enough tools, but previous briefings to the Council by the Services illustrated the fact that there were innovative ways to use existing tools that may not be widely known or understood. The need to communicate between and among the Services was universally endorsed. Also, the need to compile and communicate a catalog of management incentives throughout the acquisition community was also universally endorsed.

Discussion of incentives then led to identification of disincentives and the desire to develop a "Top Ten" list of bureaucratic impediments to reducing costs. The Council agreed that the action plan should identify and reduce bureaucratic impediments to reducing cost wherever possible.

Dr. Kaminski previously raised the notion of creating a "Bill of Rights" for program managers; that is, program executive officers and program managers should be recognized for their efforts in attempting to reduce costs, and protected from undue criticism when events beyond their control produce undesirable results. Also, the program review and oversight community owes the program executive officers and program managers responsive support in resolving issues that are above their "pay grade." Dr. Kaminski also believes it important that the program executive officer/

program manager community be encouraged to participate in the drafting of the "Bill of Rights" document.

In concluding the offsite, the Council developed the following proposed list of "incentivizing" actions:

- Inventory the contractual incentive practices and communicate the inventory throughout the Department through existing program management tools, with a long-term objective of having an on-line Department-wide program management tool. Establish discussion of incentive practices as a recurring event at program executive officer and program manager conferences. Integrate incentive practices into acquisition workforce training and education.
- Develop a "Top Ten" list of bureaucratic impediments to reducing cost that can be remedied, such as the level of waiver authority for certain contracting actions. Facilitate consistent resolution of the identified impediments without forcing identical solutions to dissimilar situations.
- Determine viability of keeping part of the cost reductions in the program to provide a management incentive for taking the risk of establishing the cost reduction incentive.
- Catalog and communicate management incentives available to the SAEs, program executive officers and materiel acquisition commanders to



Honorable L. Noel Longuemare, Principal Deputy Under Secretary of Defense (Acquisition and Technology).

Department of Defense photo

reward cost reduction actions.

- Prepare a program manager's "Bill of Rights" to be signed by USD(A&T).

Secretary Longuemare also acknowledged the large contribution from industry in shaping the Council's affordable weapon systems strategy, stating that, "I am enthusiastic that together we have an excellent opportunity to shape effective new approaches to the weapon systems process, and look forward to a mutually productive exchange."

Secretary Longuemare concluded the day's events by stating that he was pleased with the strategy outline, priorities and action plans at the offsite. The membership, he believed, developed a strategy that will achieve proactive buy-in on specific prioritized high-payoff actions to keep U.S. defense capability No. 1, despite downsized budgets. In summary, Secretary Longuemare spoke of timeliness and commitment: "I believe this represents an opportune moment, requiring decisive follow through, which Paul Kaminski and I are committed to provide."

COMMANDANT SPEAKS AT BRYANT HIGH SCHOOL COMMENCEMENT



Photo by Richard Mattox

Brig. Gen. Claude M. Bolton, Jr., Commandant, Defense Systems Management College, was the keynote speaker at the Bryant Alternative High School Commencement, Fairfax County, Va., on 6 February 1995. Bryant is an alternative high school for those who have experienced difficulty in other, more traditional academic settings. As one of Bryant's sponsors, the College provides mentorship and other forms of assistance to the school. Pictured from left: True Phan, Student Speaker; General Bolton; and Laura Conner, English Award Recipient. Ms. Phan will pursue a career in computer science, while Ms. Conner plans a career in business.